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MR. SMEDLEY'S FREE HOSPITALS, LEA MILLS.

THE applications for admission to these Free Hospitals have become so numerous from all parts of the kingdom, that it is found impossible to take a tithe of them in; and as Mr. Smedley is now erecting an additional mill, which will cause an increase to the number of his workpeople, he has decided to confine the admissions to the Free Hospitals to his own hands, and to persons in the immediate neighbourhood. Upwards of 400 patients per annum have been admitted, many the servants of wealthy persons, and many recommended by surgeons and physicians, whose cases had previously been given up as hopeless, but who have, at these Hospitals, been restored to health, and, in many cases, saved amputation of limbs. Mr. Smedley hopes, now the success of the treatment has been so long proved, other Free Hospitals will be opened. All the chapels, most of the schools and missionary work in the various localities, will be continued as before. Mr. Smedley was on the point of retiring from business altogether, having had forty-five years of close application to it, and having no family to succeed him; but now, having adopted John Marsden, the son of his cousin, Mrs. Marsden, and who has been actively engaged in mercantile business in Australia, the mills, hospitals, chapels, &c., will go on, Mr. and Mrs. hope, long after they have ceased their labours.

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A selection of baths for the most ordinary diseases will be found page 429; and Home Treatment, page 6.

Spongio or mackintosh bandages should not be washed in warm water, but merely dipped in cold water and squeezed out, not rubbed.

Full Index to the various matters contained in this work will be found page 437. Baths, bandages, and all appliances mentioned in this work, and books, may be had of John Higdon, Lea Mills, Derby.

INTRODUCTION.

FIRST IMPRESSIONS OF MEDICAL PRACTITIONERS

ON SEEING THE PRINCIPLES OF HYDROPATHY CARRIED OUT AT AN ESTABLISHMENT.

I have had medical practitioners, and amongst them several physicians, who have come, without prejudice, to see for themselves upon what principles Hydropathic practitioners profess to act. Within a short period two physicians and several surgeons have been successfully treated at my establishment for ill health they had not been able to cure by their own prescriptions.

The medical profession generally look with contempt on Hydropathy, believing we have no sound principles for the basis of our action, such as they suppose they have in their counter-irritants, setons, issues, mercurial ointment, their soothing narcotics, stimulating quinine, steel mixtures, colchicum, for causing changes in the components of the blood and the tissue; they have little idea we can overcome the most obstinate and long-standing constipation of the bowels by our simple means. They cannot believe mere water can have either the powerful or curative effects of their severer applications, or produce such quick results. In all these points they are in error. We can lower the pulse and subdue inflammation far more rapidly than they can by any of their applications, *and without lowering the vitality of the body.* Surgeons are well aware of the vital importance of procuring immediate perspiration in many cases; now, by a fomenting pack, or cold wet sheet envelope, or spirit lamp, *we never fail to produce it at once.* Their James's powder, &c., have to enter the blood, and go through an elaborate process before they can have effect: the effect is uncertain, and depends a good deal on the power of the stomach to act. We leave the stomach at rest, and, by drawing the secretions through the skin, relieve it, instead of burdening it with what the surgeon knows is likely to cause nausea, and which is very often the result; the medicine then, instead of being beneficial, is highly injurious.

When medical men come without prejudice to examine into our mode of practice they soon see we have a basis and principle to act upon, and that we do not give this or that bath or wash over, hit or miss, to produce some result as likely to do harm as good. No! Every man of good principle will take care he has a clear conviction in his own mind, and the truth of it confirmed by known results, before he will practise. If he has no clear, defined principles upon which he can act with confidence, then he is guilty of a great social sin in acting at all.

My medical visitors have often questioned me on the principles I act upon. I gladly answer their questions, that they may judge for themselves. I never shun questions, having nothing to conceal. If a case comes before me that I cannot see my way in, I am ready and feel bound in principle to acknowledge it; but these are rare indeed. The grand starting-point is to ascertain *what the life of the organic body consists of, and where it is.* Every medically-educated man will say at once it is not in the blood, it is not in the muscle, nor in the bones, nor in the matter of the brain, nor in any organic matter of the body; but it is in the vis vitæ, the power of life developed in the nervous system. Cut certain nerves, and the gastric juice will no longer be secreted to dissolve the food. Lower the vitality of the organic nerves of the stomach, and the healthy assimilation of its contents is stopped.* The same by the liver, it is no longer able to draw impurities out of the blood, or manufacture its saccharine matter and red corpuscles. Destroy those nerves, or lower their vitality, and the vital power that holds all in order and gives life is wanting; and so, as I hereafter remark, the nervous fluid, or electricity, or whatever it may be designated, is the life of the body. Without it the substance of the body soon dissolves and decays; with it in full power, all is life and vigour. Now, when we have disease to contend with in whatever degree, this vital power is under par; our aim is to raise it, and that can only be accomplished through the means of the stomach and the blood. No practitioner can cure any ailment, or any wound, or any disease, but by making better blood, and better blood cannot be made but by the influence of these nerves of nutrition. Now, by applying as we do to the surface of the body, we set the most powerful apparatus for purification at work in the whole frame. The skin, with its seven to eight millions of pores, and its miles of corkscrew sebaceous and sudorific glands—we purify through these, and thus relieve the frame of morbid matter which is oppressing the delicate organic nerves; we take away quickly the offensive matter which is sickening the whole frame. The Allopaths, to accomplish this, must put stuff into the stomach they know is an outrage upon its structure and functions. They have to trust to its bearing this trial in order to reach other organs or parts diseased; they give opiates to give sleep and allay pain; they dare not leave the patient without a medicine to endeavour to rouse the nerves they have partly paralysed. Thus in the physician's prescriptions, pil. hydrarg. is always associated with opiates, one to counteract the mischief the other causes, and for this end the doctor always gives them together.

The blue pill over night, which so lowers the power of the nerves, and stimulates the liver to make every effort to expel it again, is followed next morning by a black draught, to whip the poor bowels to expel their contents, without any consideration of their structure and natural office; and so it is with setons, blisters, and issues, and the rest of the inventions for forcing nature to do what the doctor wishes, but in which the poor patient always comes off a loser, present or future. All is war against the frame and its functions. All our treatment, on the contrary, is immediately comforting to the body, with the exception of mustard plasters, and those never produce any evil results after. We produce counter-irritation by our fomentations, our bandages, and our hand-rubbing. The bandages and fomentations comfort and soothe the nerves; the wet body bandages determine blood to any part affected, to give life and action, and so by all our appliances. This system must succeed eventually, because it is founded on principles of reason and truth, which Allopathy is not, by the showing of its own professors.

The organ of the Allopathists, the *Lancet*, of 19th Sept. 1857, says, "It is indisputable that the records of legitimate medicine, so far as treatment is concerned, contain such a heterogeneous assemblage of different and often conflicting views, as to give rise, in some quarters, to the conclusion, which is not unnatural, that the principles of medicine are really unsettled, and that the art itself is purely an arbitrary one, depending on the caprice of the practitioner." There are numberless works defending some new theory of medicine, yet Sir John Forbes, M.D., is compelled to write, "Things have arrived at such a pitch, they cannot be worse: they must mend or end."

Hooper, in his Medical Lexicon, a work of standard authority, repeatedly contradicts his own stated principles. He says, whatever lowers the vital power of the organic nervous system, or, in other words, prevents the due supply of nervous fluid descending from the brain, tends to paralysis; yet as will be seen by my quotation further on, he prescribes bleeding, calomel, blistering, &c., in cases of paralysis, trying to cure by aggravating the mischief already caused by the lowered vitality of these nerves! I have recently shown some cases of crisis to a surgeon; one was a case of congested liver of long standing, the right side weak, and the knee, and especially the leg below, cold. This was caused by the obstructed venous circulation from the extremities. For many years this patient had been under Allopathic treatment without any material relief, and latterly was decidedly worse, which made him lose confidence in his doctor's prescriptions; he came to me to try Hydropathy. By application to the skin we soon got free perspiration. Then by our fomentations to the liver and bowels, and our warm bandages, we soon set the stomach, liver, and bowels to work healthily. Now, our object was to draw the morbid matter in the liver and the other viscera away, but not by purging the bowels. We got a good deal through the skin, but this was not sufficient to cleanse the system. Nature had pointed out another place for effectual relief in the lame leg, and here we followed her hint by wet and dry bandages, and by steaming and hot mustard leg baths, which shortly brought out a crisis, and laid the patient up in bed with legs apparently highly inflamed and swollen, discharging fetid matter. The appetite was little, under this disturbance of the frame, and consequently apparent sinking. Our surgeon was alarmed with the case, and said if it was his he should have little hope of the man's life, and, moreover, would at once give generous diet and some stimulants. I have named this case to illustrate the difference of our practice. I replied to the doctor, I was quite certain the patient would not only survive, but would become entirely sound in every part of his frame. We let nature work her own way, with a little assistance to cool any feverish feelings; stopped all animal food, gave only water, or weak black tea to drink: and when nature had had time to perform her work the patient became perfectly well, and has enjoyed excellent health ever since, now several years ago. I never knew this natural crisis do anything but good. The many deaths of apparently stout persons we hear of from inflammation, or fever, is owing to the inefficiency of any Allopathic means to throw off inflammation or morbid matter on to the non-vital parts, or to the surface of the body. Purgatives and blistering, &c., only further lower the nervous vitality, and tonics only stimulate to cause further loss of power by reaction. The mischief is sometimes warded off, but always at the expense of the constitution. The seeds of disease can never be eradicated but in nature's own way, and that must be done without violence to the frame, and only by increasing the nutritive powers (see Dr. Chambers, page 32*b*).

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* See page 384.

While saying so much on the evil effects of the Allopathic practice, I do not denounce its practitioners as men destitute of good principle, intelligence, or philanthropy. I wish to point to the mischief caused by adhering to a code of practice which modern discoveries have shown has no foundation in truth. No class of men perform more services gratuitously than medical men. I do not know any who have to earn a living by their labour who do so much.

The inconsistencies of some cold-water doctors tend greatly to prejudice medical men against the system: medical men well know that in cases of great debility, and in consumptive cases especially, exciting the skin, by frequent ablutions, will stimulate for a time, but the reaction leaving the body prostrate. In all inflammatory or very weak subjects, we are very cautious how we apply stimulating treatment or much ablution to the whole body; indeed, we often get patients far on in recovery before we give them what would be considered a bath, and a whole immersion, never.

Time will prove the truth of the Hydropathic principles of practice; and I cannot doubt educated and scientific men, as the medical profession generally are, will adopt true principles, if the public will allow them to break into their superstitious belief in the efficacy of physic, blistering, &c.

JOHN SMEDLEY.

MATLOCK BANK,
July 22, 1858.

Home Treatment.—I can only give general directions, and for such operations that can be readily practised where there is but little time to spare, or few conveniences. For persons in ordinary health, little time and very simple apparatus will suffice. A mackintosh sheet, a sitz, or wash-tub, as at pages 65 and 66, a head bath, foment can and pads, sponge, foot bath, thick cotton packing sheet, and drying sheets, sitz bath blanket. Spread mackintosh sheet on floor, put the sitz bath upon it, with water in it. On rising, use No. 204; then 128½; or 128½ only. Then No. 95, which is as follows: hold the head over the bath, or wash-tub will do, and with the common West India or honeycomb sponge, or half-yard of flannel or calico, sponge the head and face well and quick; then sit in the bath, with the feet out, and sponge the body and squeeze spongefuls of water over the shoulders: then stand in the sitz, and sponge the legs, and squeeze more spongefuls of water over the shoulders and spine, and then dry the body with a linen or bump cotton sheet, and not with a towel. The sheet keeps the animal heat in. The less the body is exposed to the air, the better. The above, or a dripping sheet: dip the sheet in the water, hold it up a few seconds, to let the bulk of the water drain into the sitz; then put it on in the form of a cloak and rub well, getting the hands out, and rub the body and legs for two or three minutes. It will become warm immediately. After a good rubbing, put on dry sheet, and dry well, especially the arm-pits, and rub the chest well; then dress immediately; and if in winter or cold weather, take care not to remain long partly dressed, or the animal heat will evaporate, and vitality be lost. Much benefit is lost by not dressing immediately, and by wearing slippers, which in winter expose the feet to cold. I find it useful, sometimes, if weather not very cold, to sit in the sitz bath for two or three minutes on rising, before the wash; then a dripping sheet after sponging the head. I seldom take any bath in the middle of the day, from want of time; but when opportunity occurs, a cold sitz and foot-bath is refreshing, and occasionally a cold, or tepid sheet. At bed-time a cold sitz three minutes, covered with sitz bath blanket; a head-bath is also useful at bed-time, if not very cold weather. A hot soaping and washing sitz, No. 99, once or twice a week, at bed-time, or 35½ is refreshing; and No. 130, bath list; or a vapour bath, No. 51, and soaping. The No. 51, or steamer, may be managed with some hot water in a can, and put into it a piece of hot iron or hot brick, and let the patient sit on a chair with blankets round, putting the can under the chair; or by the portable steam bath, as given in this book. We have a mackintosh petticoat for this purpose, for home use, and it serves also for spirit lamp. We have lately got a portable steamer, as sketch, page 259. Short steam baths, and cold sheet, or cold sponging after, are not relaxing, but the contrary. A spirit lamp is a very beneficial bath, and may be taken without any risk, and even by delicate persons, except in heart disease or determination of blood to the head; the spirit lamp brings out the secretions which the steam bath will not. After fatigue, a slight steam bath, or, if cold weather, No. 98, or 35½ is good. Wet packs I never take, except in case of stomach derangement, or cold, and then No. 42 or 46, for 1¼ hour, always effectually relieves me, and restores the appetite; a cold sheet or cold sponge over must of course be taken after pack or steamer, or spirit lamps; No. 177, if chest affected; or 178, Nos. 154, 157 useful and safe for most cases. The bath list will give any person a pretty good idea of suitable baths, and, by a little practice, the most beneficial will soon be ascertained. No baths, however, will keep persons in health, without rigid attention to clothing, diet, and habits of life as laid down in this work; and abstinence from all stimulants, tobacco, pastry, &c. Delicate persons will find in this work how to modify these applications to suit their cases. If the chest is affected, never use quite cold baths; use 19, 113, 72, 72½ good; Nos. 68 and 65 good, and 45, also 50 and 107, not to wash hands in cold water, if chest or heart affected. With these general directions, and the very full information in other parts of this work, any one with a little patience and attention, may get a good knowledge how to make the most of their natural powers of mind and body. The wet body bandage may be worn with great advantage a few days or a week at a time when the stomach is out of order; or when a person has a great deal of fatigue to go through: it will then be found useful worn during the day, and with a flannel wrapper over it in the night. The list of treatment suitable for various ailments will be seen on page 429.

MATLOCK BATH, FROM THE WILD CAT TOR.

PREFACE.

HAVING, about five years ago, printed (mostly for gratuitous distribution) an edition of 30,000 of a pamphlet on "Hydropathy, and its Application to the Cure and Prevention of Disease," I have frequently since been asked to publish another edition, giving the improved methods discovered and the experience we have had in the treatment of the many hundreds of cases which have passed through our hands, since that pamphlet was published. I have long been desirous of doing this, but the incessant calls upon my time have put it out of my power, and now I can only accomplish my work by using that time which should be allowed to the repose of the body. The many very gratifying testimonies which I have received, both from this country and from other parts of the world, to the usefulness of my former pamphlet, and the valuable improvements we have been enabled to make in the application of Hydropathic treatment, have induced me, now that we have removed to our summer retreat, at Riber Hall, on Riber Hill,* within view of the Hydropathic Establishment at Matlock Bank, to devote some of the early hours of the morning in endeavouring, by God's guidance, to make this pamphlet more generally useful. Here—where the sun at this season has risen high in the heavens at five o'clock, and the chorus of the birds has commenced still earlier,—where there is a very extensive and beautifully-varied landscape of mountain, valley, and wood,—there is every inducement to throw off drowsy feelings, and rise to work for the glory of God, and the benefit of mankind. Yet sometimes, even in this charming spot, melancholy thoughts will cross the mind, especially when I reflect that many of the former inhabitants of this ancient and beautiful Hall may not have been wise, in the day of their pilgrimage, in securing the salvation of their immortal souls, by being "born again of water and the Spirit," without which none who have heard the Gospel tidings, the Scriptures say, shall enter the kingdom of heaven. Should there have been such, I sometimes think, when viewing the grand panorama of mountains around, how dreadful must be their remorse and self-reproach now they have discovered that they might have had, by a life of faith and obedience, the blessings of this life and the fruition of that which is eternal; for all the treasures of earth, and all its beauties and its pleasures, are but shadows of happiness in comparison with the great realities to be enjoyed in the regions of the blest. May such thoughts of such possibilities quicken the living to a lively sense of the realities of the same. Here also is the site of a Druidical temple, the remains of which, standing on the summit of the hill overlooking Darley Dale, were, by barbarous hands, removed but a few years since. It was, indeed, a commanding spot for such a purpose. The mind is led back to the time (probably more than two thousand years ago) when the inhabitants of the surrounding district, far and near, might be seen on the first day of November ascending the steep mountain side from the surrounding district, bringing their offerings to the priests, and carrying back the sacred fire, to relight their family hearths, which had all been extinguished by the priests' command the evening before; and no doubt also often to witness human sacrifices. This worship was put an end to by the Romans, who came into this country B.C. 55; and who, on this hill, in after-times, made large fires, when the south wind blew, not for sacrifices, but to smelt the lead ore so abundantly found in this locality.

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* I have since built a lodge on the summit of the hill.

Very frequently my patients have requested me to print my personal experience of Hydropathy, and the reasons which induced me to have a Hydropathic Establishment. I promised to do that when I brought my new pamphlet out, and, at the risk of incurring criticism, I now perform my promise.

It may seem to some persons presumptuous in me, having had no regular medical education, to write on the curative principles of any treatment; but very gratifying success of our efforts, however, for the benefit of our fellow-creatures, has emboldened me to go on with my work. We may truly say, we have seen so many hundreds restored or relieved, without any serious errors, that we cannot doubt we are in the path God designs us to pursue. Our time, health, and strength, and all the means of a not inconsiderable property, are by us willingly, and even thankfully, devoted to our work, with a single eye to live to the glory of God and for the welfare of mankind. My wish is to encourage others to work and stand by the true principles of the Gospel, and leave the result to God, without any fear of the consequences.

After devoting many years to a manufacturing business, and having accumulated more than sufficient for ordinary wants, it was my intention to manage my business principally by deputy, and retiring from it to see foreign countries, making England occasionally my home. The idea of repose and leisure, after labour which few, in my circle, have gone through, was the bright time I had in anticipation viewed with pleasure; and many a dark fatiguing day has that pleasant prospect helped to cheer. A regular attendant at the Established Church and the sacrament of the Lord's supper, on terms of close intimacy with those ministers and such persons as had the reputation of being evangelical in their doctrine and practice, self-satisfied with obeying the outward forms of religion, and having the reputation of being both religious and charitable, I believed I was quite justified in looking forward to enjoy the fruits of my labour in ease and self-gratification. "Man proposes, and God disposes." We took a journey through France, Germany, and Switzerland; and on our return I was seized with typhus fever. The great varieties of temperature I had gone through, the fatigue, and more than all, the unwholesome food, and worse, the wine and malaria met with in some parts, had caused that fever which brought me to the brink of the grave. My doctor visited me on my arrival home; said I was in a bad state; gave me medicines, and told me a short time would develope my complaint, which indeed that short time soon did. Instead of our soothing wet-sheet envelope, to relieve the parched hot skin, I had only an aggravation in the shape of drugs. Soon the fever rose to madness and delirium; I entreated the doctor to give me something to cool my parched mouth, but all his accumulated knowledge of the London Pharmacopœia, with his certificate of qualification for the treatment of disease, given to him by the examiners of Surgeons' and Apothecaries' Halls, availed not for my relief: the overruling hand of God, and a healthy constitution, carried me through that fiery ordeal. Once the servant bathing my arms in cold water, I exclaimed, "What a relief!" It was the only agreeable relief I experienced; but of course only being done locally, it had no control over the fever, which was burning throughout my whole body. I was exhorted to look to Christ for the repose of my mind. I replied, I had no hope. My time of trial was come, and I found no witness in my own heart that I had ever been anything but a formal, professing Christian. I soon became insensible to all outward and bodily sensations; but my mind was often exquisitely alive to the whole course of my past life. I saw my character clearly, and it was that of a hypocrite. I believed I was shut out from the presence of God for ever; and felt the justice of my doom. God mercifully brought me back to outward consciousness, but I was long in arriving even at a low state of convalescence. My mind, however, was fully awakened to the awful folly of living for the gratifications of this life; but how to find peace, I saw not.

In a very few months after, being somewhat convalescent, I, with my wife, left home to seek for repose of mind in travel and change of scene. Some good, sincere Christian workmen in my employ pointed out to me the simple means of gaining peace; I tried it, and failed, because I was yet unacquainted with my own unchanged heart. There was yet disappointed ambition, and love of this world's good opinion, ruling in it. I found it was indeed a strong man armed keeping the house, and holding me in an iron cage of misery. Travel again brought no relief; and in a condition hopeless of life, I was advised to go to a Hydropathic Establishment, which my state of desperation only would have induced me to try. There, in November, worn as I was to a skeleton, and distracted in mind, the bitter cold-water treatment aggravated my sufferings at first considerably; had I but commenced with our *mild* system instead until the body had somewhat recovered its tone, I should have been saved much unnecessary suffering. I had not slept above an hour or so at once for months. However, after a few weeks at the establishment, I slept pretty well, I got tolerably good functionary action of the stomach, &c., and after nine weeks returned home. Here, however, old recollections soon threw me down again, I had not yet learned to count all things but loss for the excellency of the knowledge of Christ. In nine months I returned again to the Water Establishment for three months, and regained bodily health, but no relief to my mind. We set out on a tour to Cheltenham, the coast of Devonshire; then to Dover, and crossed over to France; came back to England, and returned to Malvern, and thence to Cheltenham, where I took No. 11, Suffolk-square, for the winter. I purchased the estate of Rose Hill, near Pitville, then the residence of Admiral King. Shortly after this, I found peace in believing. I had been labouring a good deal in visiting the poor and schools, and practising self-denial in those things I formerly rejoiced in; determining to seek for happiness in the favour of God, through the merits of my Redeemer, and knocking in humble sincerity, the door was at length opened to me. I entered the fold of the great Shepherd, and experienced unbounded joy and confidence. My wife, I was thankful indeed to find, heartily reciprocated my feelings. We then determined to return amongst our work-people, and try to live that life of usefulness God had so graciously laid out for us, but which I had formerly neglected to realise for the vanities and unsatisfying things of this world. I immediately went by London to Ben Rhydding, near Leeds, purposely to kneel down in the room in which I had suffered so much from bodily ailment and despair of mind, to thank God for all his goodness to me, and to dedicate myself and all I possessed to His service.

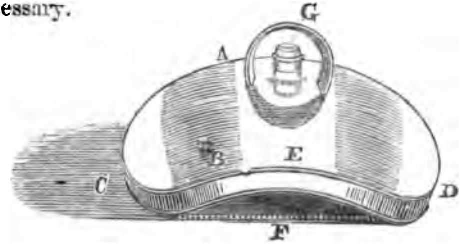
I returned to Lea Bridge (seventy miles), and sat up part of the same night burning my foolish ballads and light books, upon which even clergymen had with me often wasted precious time. I locked up my extravagant plate, ornaments, equipage, &c., until I could give them away or sell them for the benefit of religious societies, which I did shortly after. I then brought my wife from Cheltenham, and we commenced our new and better work. Soon, however, we found that we had crosses to take up, when we would no longer comply with the customs of our former circle, in giving or attending dinner or evening parties, and in keeping our house exclusive for a certain class. We found instead ample consolation in the peace within, and in the communion of humble and sincere Christians. I built six chapels and two school-rooms in different parts of the country, some, where I had work-people. I assisted many poor societies, and worshipped with our own people in one of the chapels I had built here, imposing nothing but the simple word of God on the congregation. It is now about seven years since we embarked on this course, and we have found every year to bring more solid peace and joy; and we know it will be thus with us until God shall take us to serve him in a brighter sphere.

On returning home, I took in a few men, upon whom to try the Hydropathic remedies, which proved successful; and many more making application, I made a place for the free board, lodging, and baths of a certain number of males and females: and hundreds since have here found restoration to health of body, and peace of mind, through the renewal of the Spirit. Persons in our own station then applied for advice, seeing such wonderful effects being produced, sometimes on their own servants. We did not know where to recommend them to go, as we had little confidence in the mode of treatment pursued at some establishments, which is often indeed the "cold water" practice. Some could not afford the expense (which at all the principal establishments is about £18 for the first month); so we made our house a free hospital, until we found we could not afford room enough. I then bought a small house at Matlock Bank for six patients, board, lodgings, and treatment at 3s. per day. Uniform success in the treatment soon brought more; the place was enlarged. Soon again we had to refuse applicants; and thus has it grown until we have had one hundred and ten at one time under treatment. Although I have not had a regular medical education, human physiology has long been a pursuit of much interest to me, and I now find the benefit of my early studies of these subjects. The feeling of responsibility, from the great number who have been at our establishment and the free hospitals, has also induced me to labour hard, and spare no expense, in the acquirement of physiological knowledge;

and the actual practice, in seeing the application of Hydropathic treatment to so many hundreds during the last six years, has given us confidence in our plan of treatment, from the great success in so many cases of persons who had tried medicine and even Hydropathy before, without good effect. Our system of mild treatment, with the application of bandages, not used in the same way elsewhere, and some newly invented baths, have gained such celebrity, that we are now compelled to limit our admissions. I could refer to physicians, surgeons, homœopathic practitioners, clergymen, dissenting ministers, military and naval officers, merchants, manufacturers, &c., from whom I have often received testimony, acknowledging the benefits derived from our mild practice. In the case of females especially, this treatment has done wonders. *(My wife has sole charge of female invalids.)*

The charge at the establishment is fixed with an intention to make it neither a source of pecuniary emolument nor of loss. A large sum of money has now been invested; and the baths are models for Hydropathic Establishments or Public Baths, and I am very desirous of calling the attention of the patrons of the latter to their superiority over the ordinarily-constructed baths, which not unfrequently cause irreparable injury to the body. No person can use a plunge bath without risk. We could refer to patients who have come to the establishment for relief, whose maladies have been caused by plunging into a cold bath, or into the sea. Many escape injury by such bathing, but none practise it without the risk of being invalids for the rest of their lives, from congestion of the brain, asthma, or internal tumours, caused by the blood being suddenly driven on the internal organs and certain weak parts which are not able to return it. Females, especially, are liable to danger from plunge baths (see Mrs. Smedley's Manual, 1s. 6d.).

One of the principal objects I have in view in this work is to teach Hydropathic remedies for self-application, and to show the labouring classes how to manage many of the processes by the simple means within their reach, which, if acted upon, would often stay the progress of fever, consumption, and inflammation, or prevent their proceeding beyond the first symptoms. Resolution, and not sparing trouble, alone are necessary.



HALF CHEST FOMENT CAN.

One inch thick; A to B, 9½; C to D, 13½; E to F, 3; G, plug.

SECOND PREFACE.

RIBER LODGE, *January*, 1863.

THE first edition of this work was published June, 1857; and now that a sixth edition is called for, making the twenty-eighth thousand, besides 30,000 of my first Pamphlet, for gratuitous distribution in 1851, I have only to repeat our first convictions, from extensive experience in practice, that the restoration of weak or diseased frames can only be restored by remedies which are calculated to aid the natural vital principle by which we exist. Dr. Anstie, in giving the inaugural address to the students of the Westminster Hospital this session (October, 1862), remarked that Dr. Chambers and others were now bringing forward some new ideas on the nature and cure of disease, and had come to the conclusion that the deficiency of vitality is disease, and that therefore all remedies should be such which directly or indirectly aid the work of nutrition; and to this Dr. Anstie gave his assent, and well and safely might he do so. Certainly when there is not a deficiency of vital power, a person must be well; and when that is deficient, neither digestion nor any function can be properly performed. Any unlearned person will easily understand this, and give unhesitating assent to the truth of it; nor will any one think it a discovery new or old. But when Dr. Anstie, Dr. Chambers, and the rest of the legally-qualified practitioners, go on to teach these same students to use blisters, setons, issues, the lancet, leeches, mercurial ointment, iodine, mercury, aloes, strychnine, preparations of opium, henbane, and other narcotics without number, and the thousand other modes of attempt at *making nature act*, such treatment must appear to any considerate person as totally opposed to their doctrine of using no means to cure disease but which "*directly or indirectly aid the work of nutrition*;" for none of these nostrums can by any chance aid nutrition, but have a very certain contrary effect. By acting upon the simple and true principle of using no means for the cure of disease but which directly or indirectly aid the work of nutrition, several of my bathmen have small establishments on their own account, and, without any medical assistance, undertake cases which have baffled the legal professors, and succeed in curing them. They average ten to twenty patients each, and at some seasons more. Their charges are from 17s. 6d. to 25s. per week, including board, lodging, and baths. So successful are they that every year they find their accommodation insufficient for the increased number of patients. Scores of cases who had been given up, and themselves hopeless of life, are now in health and strength. We now average ten to eleven hundred cases per annum at our Matlock Bank Hydropathic Establishment, and about four hundred at our free hospitals; and few cases come but who have been brought into a bad and often desperate state by these anti-vital remedies; and as to our success in curing, by adopting the principles Dr. Chambers and Dr. Anstie propound, the proof is shown by the continual increasing number who come to our Establishment. We carry out the principle they advocate, and they an entirely opposite course. A physician called upon us the last summer, and said he had come to look over our plans. I replied I was very glad to see him, and that I felt it a great hardship to have such a position in a manner forced upon us, and that I had never any intention of continuing the practice, feeling it was a position which only medically educated practitioners should occupy, and I had hoped long before this to have been able to turn over our charge to some of the medical profession; but, notwithstanding our liberal offers, and having had several to try the undertaking, they had given it up, seeing the desperate and apparently hopeless cases of so many of our visitors. I offered to prescribe a little ordinary home treatment for my visitor, when he informed me that he had read my book, and had come purposely to see if he could be relieved of a very painful case of disease of long standing, which all the means at his command had been unable to reach for years. I told him he would certainly soon be cured by our plans, and in a very short time he had no need for his own remedies. The means were so simple that he could not at first believe they would be of use; but acting on Dr. Anstie's, Dr. Chambers', and Sir Charles Bell's theory, that the deficiency of vitality was the cause of the disease, and the raising that power would cure, I prescribed our natural gentle stimulating remedies. The case was clear enough—want of vitality in a particular organ; but all the means he had used, or could think of, only tended to weaken. This physician counts his receipts by thousands per annum, and is a man of note, and highly esteemed. I advised him never to mention having spoken to me, as he would certainly be denounced. I had afterwards a letter from him, expressing his great gratitude for the benefit he had received, and lamenting he dared not introduce our plans in his practice. If we were practising for pecuniary profit, such statements might be doubted; but the practice, as we carry it on, is a pecuniary loss, and requiring unremitting labour, and the total deprivation of any recreation or absence from home. The great success, however, in seeing human suffering cured or relieved, fully satisfies us for all we have to go through. The practice here could be made remunerative by much more moderate charges than the terms at Malvern and elsewhere, now we have made such complete arrangements for carrying on the practice, and I hope yet, for the perpetuity of the work, we shall meet with those who will carry it on when we can do so no longer. Many hundreds will remember their visit to our Establishment, and the friendships they formed there, while life lasts. They have met often to separate for life to various parts of the world, but yet to hold intercourse, now that the postal and telegraph systems bring nearly all the world in communication. We frequently, at our solitary lodge on the summit of Riber Hill, have letters from our late patients from India, Ceylon, Africa, Turkey, Egypt, Spain, France, North and South America, Australia, New Zealand, China, Russia, and even such out-of-the-way places as the Feejee Islands.

FUNDAMENTAL ERRORS in the treatment of functionary disorder are constantly brought under my notice, and I am prompted every day to observe to newly arrived patients how strange it is that mankind are not taught, as a primary part of their educational knowledge, the structure and functions of the body, in and through which all their faculties are to be developed and made available for life's purposes. From some reason not easily seen, the study of this all-important subject is entirely neglected in the education of youth; but it is to be hoped this will not be the case as society progresses in mental attainments.

As to the subject being too abstruse, and requiring opportunity for anatomical dissection, it is not the case. The why and by what powers the body lives and performs its functions; why and how the food taken nourishes the body and is taken up into it; how every voluntary action is performed by a direct telegram from the brain, by action of the will on the electric wires from that centre through the nerves of the spine, and which are continuous by millions to every part of the body, internally and externally; how involuntary nervous action is made to go on independent of the will, as in case of the lungs, the heart, and the eyelids; how the lowered vitality of muscular action of the veins causes obstructed circulation, and, filling the distended veins, telegraphs sensation of pain to the brain by pressure on the nerves of sensation, and hence what is termed inflammation; how, when food is taken into the stomach, it is there dissolved by the action of the gastric juice, when the electricity from the plexus of nerves placed at the pit of the stomach, and embracing it with its thousand threads, causes, when a person is in health, the chemical change of the food in the stomach, which, passing in its course into the duodenum, is there mixed with gall from the gall bladder, and with pancreatic fluid from the pancreas; how then the matter is passed into the small gut, where it is, by the aid of electric power, taken up by the millions of absorbents termed intestinal villi, and passing through knotted channels termed mesentric glands, which again change the character of the matter on its way to the thoracic duct, running upwards and inside the spine to the left clavicular artery, where, mixing with the exhausted blood, it is again forced into the heart, and by it into the lungs, to receive the life-giving oxygen from the air—are all matters of such easy comprehension that youth would have far less difficulty in mastering than many problems they are set to solve, and which, when solved, are often useless to them from failure of health and power to carry their knowledge into useful action. Neither would they transgress the Creator's laws as to diet and habits of life, to the extent they do, had they been taught the consequences. The extracts and the statements in this work on these subjects are nothing new; they are patent to every young student in the medical art, but mostly a sealed subject to the public, who quietly, and with a simplicity of faith not to be surpassed by the devotees of any religious sect on earth, surrender their wonderfully-constructed body into the hands of the "profession," to be drugged, blistered, bled, and dieted as the London Pharmacopœia has directed the professional man to do for the last 100 years, with the addition of a thousand new fancies for drugging and torturing poor mortality.

Health, education, prospects, usefulness, and life are sacrificed to treatment, the nature of which the poor trusting human subject knows nothing but by its terrible effects. Mankind, however, love old institutions and established customs, and many thousands or millions will yet fall under the combined action of sedatives, purgatives, tonics, stimulants, blisters, and the lancet, probably to the end of time (see pages 226, 227, 32*g*).

By way of illustration, I give a few instances of attempts at cure by the authorised practice, which came under my notice this week:—A gentleman, aged 35, from overwork, causing indigestion and generally lowered vitality, had rheumatic fever, was confined to bed five weeks, drugged to no purpose, except to further weaken, when both the patient and the doctor became despairing at the results. The honest doctor told his patient he thought he had had medicine enough, and, as the weather was warmer, he had better give it up, and try change, fresh air, and our mild baths. Such a case would not have been in bed a week with our treatment, nor would ever have had the disease had he known our simple home treatment; by keeping the body in order, he would have taken precautions long before, and prevented such a disease coming on. Rheumatic fever does not come on till, after greatly impoverished blood by cold or indigestion, the proper supply of serum is not supplied to lubricate the sheaths in which all the muscles are encased; and when this serum is wanting, the muscles move in sheaths more or less wanting this lubricating matter, and soon inflammation comes on, and excruciating pain by every movement. Instead of calomel, which farther impoverishes the blood, or colchicum, which heats it, or opiates, which farther deaden the system, we apply our No. 46, or 47, or 98, or 42, or 59, or 55, as stated in the bath list in this work; and by these plans rheumatic fever is quite as easily cured, and as speedily and effectually, as a common cold, and without leaving the body, as by the ordinary medical treatment, a prey to a repetition of the disease, and very commonly heart affection.

When the body is weak, and when organs are so weak that they fail in their functionary action, medicine, blisters, &c., are given, which, it is well known, further weaken. I cannot at all understand this treatment. Disease is never *cured* by acting on such a principle, nor is it possible. A case came in this week of long standing disorder of the kidneys, which I thought necessary to have the opinion of a very eminent surgeon upon. After examining carefully the case, he agreed with me the disease was in the kidneys, and not merely lumbago, which had been supposed. The surgeon gave his prescription; in the draughts, alkali was the leading ingredient. Yet now, in tracing the nature of the disease, the why and wherefore pain in those organs, and the unhealthy urine, we come to the undeniable fact that the muscular action of the arteries in the kidneys is weakened, and unable to propel the blood through in the same vigorous manner as in health, and hence gorged veins, which, by the pressure on the universal telegraph system of nerves of sensation in every part, communicate the sense of pain to the brain, calling for help; but the only reply from the doctor is a blister, purgative, or opiate. Again, as to the unhealthy urine, the glands in the kidneys, which in health only select the proper urinal excretion, are, from weakness, unable to make the proper selection, but let out the nutritive parts of the blood along with the urine, and this soon causes prostration. Now one would suppose the sound way to act in such a case would be to try to raise the electric and selective power of those glands; but, just as in the case where pain is present, lowering remedies are prescribed, to keep down, it is said, inflammation, when inflammation is, in fact, the embodiment of weakness. First, lowering treatment is tried; this inevitably brings the patient lower. Then they say inflammation is subdued, when, in fact, only the remaining vitality is subdued; and, for fear the patient should sink, stimulants are freely administered, and which very soon bring the patient too high, and then lowering treatment and starvation is resorted to, and it is well for the poor body if it comes through such a scientific ordeal with life; it never comes through cured or scatheless. Nature, after this trial of strength, is sometimes left to her own remedy—good fresh air, quiet, and simple diet—and recovers. Then the aforesaid scientific treatment has the credit of cure; but had the patient a knowledge of the structure and functions of his body, he would never allow such absurd and utterly false principles to be tried upon him.

I could give hundreds of such instances of the mischief of drug medication, blisters, setons, issues, &c. The only idea seems to be to *make* any organs act which are inactive, and so purgatives and diuretics are given, to *compel* action of the bowels and of the kidneys and other organs, at the expense and totally regardless of the certain injury to the nervous vitality or electricity of the organs, and by which vitality alone they act at all (see page 236).

A friend who had an attack of inflammatory disease, was, after ineffectual treatment by medicine, induced to try our plans, and very soon got well. About two years after, disregarding the warnings he had had as to his course of life, he was again suddenly seized with another inflammatory attack, but this time far more acute and painful than before. The surgeon was immediately summoned, and, to allay the pain, gave opiates freely. This certainly subdued the patient's sensibility to pain; but as soon as the effects of the opiate had in some degree subsided, the sense of pain returned, as the opiates had not strengthened the vitality of the veins to remove their congestion, but weakened them; and so more opiates and stronger measures were resorted to, until, after the unequal conflict, Nature was finally subdued, and, as the first medical advice that could be got had been used, the body was interred with the satisfaction that nothing had been spared to cure; certainly nothing had been spared to conquer the vitality of the living frame, and, after several months' hard struggle, opiates, aperients, and blisters proved as effectual as Armstrong's biggest gun in gaining the victory and extinguishing life. Yet, from the total disregard of the necessary knowledge how to make the most of the constitutional power every individual is born with, the war against the delicate organisation of the human body still goes on; and well would it be for many poor lingering sufferers if the "*remedies*" were more potent, and finished them with less pain and in a shorter period.

Whatever tends to weaken an already weakened part never can give more vitality. Whatever attempts are made to *force* the organs to act without natural ability in those organs, is an insult to the Creative Power, whether the attempt is made by medicine, or cold water, or any other nostrum. The body, when low, must be nursed by *comforting* natural means, until Nature can rise and act, which it will be a pleasure to do as soon as there is any ability (see page 326).

If the public were aware of the why and how purgative medicines act, they would hesitate before swallowing stuff which they would see could only injure them. It is well known that sudden fright or great prostration causes evacuation of the fæces and of the urine, without the person having power, by any effort of the will, to retain them; and why is this? It is simply from the nervous vitality in the organs becoming so weakened that the will is powerless to prevent it; and precisely in the same way, calomel and all other purgatives act by subduing the nervous vitality and conquering Nature, and this is called getting the bowels in good working order, and, when carried out for any length of time, inevitably brings on serious or fatal disease, as the matter which should be taken up by the absorbents in the bowels to support life is forced through the body. I have a case now of hopeless dropsy of the bowels from the use of purgatives.

One day, I was chatting with a doctor who had come to see our plans, when a friend called upon me with a young man about eighteen years of age, who had had rheumatic fever several times the last two years, and was reduced to a shadow, with bloodless face and a pulse throbbing in a manner I had not witnessed before. He had been drugged and blistered, and, as usual, all failing to cure, he was advised to give up all medicine and go to his home, a farmhouse in the country. The doctor examined him, and said it was a case beyond the reach of any curative means, and that the heart was seriously diseased. I asked him what he should do in such a case. He replied, "Only attempt to relieve by opiates and calomel, to soothe the heart, and keep the bowels in order." Now, on asking him what the physical effect of such action would have been, he said, "To lower the heart's action, and to reduce the red corpuscles in the blood." I remarked, "We should attempt, on the contrary, to get good action of the heart, and to increase the red corpuscles by all the means in our power." I took the patient into my establishment, Matlock Bank, gave comforting, gentle treatment, and he soon got well, and now remains so.

In making these statements, I disclaim all intention of charging the legalised medical practitioners with either ignorance or want of principle; it is well known neither is the case; but that thousands of lives are sacrificed by their carrying out antiquated practice is evident to all who make any observation. The fact is, medical men stand so much in awe of public opinion that they dare not go out of the old track, although they are constantly seeing the inefficiency of their standard remedies; and they also frequently witness the efficacious treatment of their given-up cases. They feel, however, that their character for orthodox practice would suffer the moment they adopted any new mode of cure, although they are allowed to use new drugs, and of a terribly potent kind. The moment a legally qualified practitioner ordered a wet pack, he would be pretty certain to be packed off by his patients or their friends; they would say that he had either lost confidence in his own practice, or was trying experiments. And thus the medical practitioner has his hands bound, and sees his patient suffer or die, when he is cognizant of similar cases cured by other means.

Amongst many striking instances which have come, and are indeed continually coming under our notice, the following is one:—I received a telegram one night from a large town in the midland counties, requesting me to send one of my best bathmen to a given-up case of typhus fever. Before daylight, I sent the bathman who superintends my free hospital, to meet an early train eight miles off. He arrived at his destination about ten; found a youth of fourteen in bed, delirious, and given up by two medical men, who had been in constant attendance upon him, but could not turn the disease or stop the delirium. The nurse told the bathman it was useless attempting to get perspiration—everything that could be done had been tried in vain. The bathman set to work, called for some hot water, and put the youth into pack No. 47. In a quarter of an hour the nurse touched the forehead; said no perspiration could be got. The man replied, "Wait longer, and you will see it come fast enough." In thirty-five minutes the patient was perspiring all over, and the delirium disappeared; he had No. 13 and No. 10, and was quite composed; the bowels acted, and produced great relief. The stench when the youth was unpacked was almost unbearable, from the poisonous matter being withdrawn through the pores of the skin. New doctors, however, came forward, said enough had been done, and that the youth was too weak for any more treatment. My man refused to stay, and came home. I said we should soon hear of a relapse, now they had stopped the applications to the skin; and in forty-eight hours I had a telegram saying the youth was dying of inflammation of the bowels, which I was certain was not the case, but the morbid matter, being prevented going out through the skin, was causing diarrhœa, from which he would very soon have sunk. I sent my man again, but previously telegraphed directions for treatment. The patient again rallied, and came round slowly, but recovered; he had, however, another relapse at home, but got over it. Now, if the doctors had allowed my bathman to continue his treatment a few days or a week longer, the youth would have been well in a fortnight. The relapses were entirely owing to the neglect of the skin, and not using our comforting bandages to the bowels, and to taking internal remedies, which are all at war against the vitality of the frame.

Such evidence should at least have excited the curiosity of the medical practitioners, to see by what means a fellow-creature's life had been preserved when they had given up the case, but none of them have the courage to risk their reputation or their practice, and so the grand depurative agent—the skin, with its eight millions of pores to let out the morbid matter—is totally neglected, never soaped over, never bathed; but febrile drugs to force the skin, and purgatives to "cleanse" the poor already relaxed bowels, are and always have been used; and it is only where Nature has sufficient inherent power to *resist* the effects that the patient survives; all weak die, or linger out a miserable existence. It should excite some spirit of inquiry when even the legal profession come and put themselves under my care—a manufacturer—and get well. At this moment we have the near relatives of medical practitioners going on well, who have tried their relatives' drugs in vain. When will mankind shake off superstition and prejudice, and judge for themselves? Not in our generation. I fear man is too naturally superstitious and wedded to old usages.

By way of showing the kind of cases which usually come to us, I give a few specimens out of hundreds similar:—

"Mr. SMEDLEY,

"DEAR SIR,—I am afraid I shall not be able to come to Matlock before Thursday. I have been casting about as to how I should travel, for I have not been able for some time to sit more than a few minutes together, except now and then. The pain is in my hams and in the sinews of my legs, increasing the longer I sit, and becoming very violent. I am afraid that unless I had something to recline upon I should never get safely to Matlock. Perhaps you can tell me whether the railway companies furnish anything to recline upon. Could you recommend me to do anything in your system to relieve me during the four days between this and Thursday, so that I could be some little relieved to enable me to travel. About fifteen months ago I had a strange sensation in my head, a sense of fulness, which increased almost daily, occasioned, as I thoroughly believe, by some painful circumstances, that I will explain when I see you. This sensation in my head continued upwards of three months, when I had an intermission of about a month, when it returned with greater violence, accompanied with a derangement of sight, so that every object was double. I could not read a book, and when I had written a letter I could not read it. I was almost incapacitated from business on account of my memory. At the end of April my medical man ordered me from home. I went to R——, to my sister's, and she thought I ought to have further advice. I went, accordingly, to Birmingham, and saw a physician, who thought I had worms. He gave me an injection and some prescriptions. This injection I made use of; and when the contents of the bowel came away, there was swimming at the top of it a thin skin, which I took to be the inner coating of the bowel, dotted with very small pin points of blood all over. The injection consisted of an infusion of quassia chips and salt. I took his medicine, and from that time I date the eight months of horrible agony which I have endured. I continued under him until the beginning of August, when he ordered me to Scarboro'. When there I could have no motion scarcely without an injection, and lost fifteen entire nights' rest there. I consulted an homœopathic physician, who gave me some little ease. On my return home I was at a loss what to do. My sister and others urged me to come to your place then, but I was loath to go from home, as I was to all appearance in such a precarious state. After two or three weeks I called on Mr. ——, a surgeon here. He was at first at a loss what to do, not knowing whether there was anything forming or some obstruction. At length he prescribed injections of warm linseed oil and warm water; a quart of which I had daily for five days. For five or six weeks I had injections once, twice, and three times a day, giving me considerable relief, but leaving behind it what he called neuralgic rheumatism, and from which I suffered very greatly, trying almost everything that anybody recommended. I had two blisters on my thigh and one on my forehead; these three relieved me in some measure. I had then a large one on my back, just above the anus; the latter was a slight relief, although the source of great pain, which has continued occasionally since. The surgeon has said for some time that the mischief in the bowel has left a spasm behind it, that now so heavily afflicts me I cannot describe it. The night before last I had an horrible night, and last night my pains were not so bad, but I had no sleep at all both nights. I have not taken any medicine for a fortnight or three weeks, except one drop of tincture of nux vomica at night, and a drop of tincture of sulphur in the morning. My appetite has continued good throughout my whole illness. I do not smoke or take alcoholic drinks. I should think I have lost three or four months of my usual sleep at least during this illness. All the medical men I have been under refer my illness to the first illness, and throughout to the nerves. I have been sounded and examined, and nothing found amiss, except what I have described. When I was at Scarboro' I met my old friend Mr. C——, of your place, who wished me to come to Matlock. I am afraid this long statement will trespass much upon your time. I trust you will excuse it, as I wished you to understand the ins and outs of my case before I came. You may guess my anxiety, when I say that I have eight children dependent upon me entirely.

"I am, dear Sir, yours truly,

"T. N.

This patient came, and was of course confined to his bed for some weeks, as the weather was severe; and the terrible spasms in the bowels and rectum frequently returning, at first caused such prostration that to an ordinary observer life would seem impossible. I, however, felt much confidence that he would get well, and was not mistaken. He recovered perfectly; and when my bathman last met him at the Great Exhibition in London, he said he was a wonder to himself.

Now let the reader remark this patient's nervous system was worn down by a good deal of mental anxiety, and consequently the vital powers of the digestive organs and of the whole body was lowered; and mark the effect of the usual anti-vital remedies prescribed by the physicians and surgeons, and the terrible suffering caused by still farther draining the little vitality left. Soon as the patient came under our treatment, we applied no means but such as would raise the vital power; and he soon got some relief, and gradually got well.

Thousands are martyred and sent to the grave by purging, blistering, &c. &c. A striking instance of this occurred a few months since. A man was taken with severe colic pains in his stomach and bowels. He sent for the doctor, whose only idea, according to the legalised practice, was to get a passage through the man, and gave strong doses of castor oil and brandy. With difficulty a passage was got; but in a few hours the excruciating pain returned, and all attempts to get another passage failed. The man died in great agony. Now let the reader see how clearly the result was owing to the anti-vital remedies. The colic pains, in the first instance, was the consequence of want of vitality, and, according to Dr. Anstey's sound theory, the remedies should have been such which would have raised that vital power; but castor oil could only make the bowels act by subduing the vital nervous power of the stomach and bowels to hold their contents, and by that means discharging the contents, but the remainder of life went out at the same time. The vitality was so extinguished that when an attempt was made to force the bowels again to act, violent spasms came on, and the man died in agony. I had a similar case, but a weaker, less temperate man; and the seizure was far worse. It took four men to hold him while we fomented his bowels, and packed his legs in hot mustard cloths, using our No. 144, 153½, also 47. Soon as we could keep him quieter, the result was, in a few hours all the pain had ceased, the bowels acted naturally, and by keeping on the body bandage 165, with flannel wrapper over it for a few days, night and day, the man was able to go to his work. He was, in fact, well the day after the attack. We used such remedies as Dr. Anstey, Dr. Chambers, and others recommend, but do not practise.

Two severe cases have just occurred, and both soon recovered by the simple means stated as follows, without any assistance whatever from the legal doctor's armoury. In the case of the man who had the accident with the lead, he had formerly a slight accident of the same kind. Lotions were applied, which the man said drove him almost mad. He was laid aside from work, and it was months before he recovered.

His father-in-law had an accident something similar. Lotions, blisters, &c., were used, drawing away the vitality instead of aiding it, and he lost the sight of one eye.

CASE OF A MAN BURNT WITH MOLTEN LEAD.

The lead went into both eyes, over face, one hand and wrist, and caused excruciating pain. 58 was immediately given by means of some boiling water in a vessel, with a narrow board put across the top of it for the affected hand to rest upon, and so have the benefit of the steam; then a thick woollen wrapper thrown over the man's head and vessel altogether, so as to keep in the steam, every five minutes just lifting the wrapper up, and gently putting into the vessel a few red hot cokes out of the fire nicely kept up the steam. This process soon eased the pain, by setting eyes, nose, and mouth, watering well, which drew away the inflammation gradually, as well as the pain. After the above process had been continued nearly an hour, 220 was applied to each affected part, and at night the steaming and poultices were all repeated; next morning he was so much better that 151 was all that was required, and he was able to attend partially to his work, and the following day was quite restored, and only sponged the eyes with milk and water.

TREATMENT FOR A SEVERE CASE OF LOW TYPHOID FEVER.

Man about 40, full habit. Keep regularly 220 on nape of neck, and 220 on pit of stomach, and 169, 186, 177, and 215 with oil silk cap over, and 153½ to feet. First in the morning, 26½, with vinegar and water; forenoon, 141; afternoon, 48; bedtime, repeat the "First." After the fever abated, weakness was the principal thing to contend with; then only gave the "First" and "Bedtime" Treatment, and took off the 220. When able to move about, gave Spinal Treatment as 112 and 113, and also 110½, and occasionally 50 and 99½. This was quite successful. 221 also is equally successful.

LEGAL PRACTICE VERSUS UNQUALIFIED.

(This Case was restored entirely by our Treatment.)

*G * * **, *3rd June*, 1861.

J. Smedley, Esq.

Sir,—Within the last week I have had your invaluable work on "Practical Hydropathy" placed in my hands; and from consulting it, I have been led to address you respecting my own case, notwithstanding that the surgeons to whom I have mentioned the subject, and various other people whom I have considered qualified to give a sensible and unbiassed opinion regarding it, have uniformly dissuaded me from giving the treatment a trial. But as other means utterly fail in producing favourable results, I am induced to apply to you, and I trust you will, in reply, state frankly whether you consider the water cure suited to my disease. To enable you to do this, I will give you an outline of my case, and, as far as I understand it, the treatment which has been pursued. In the first place, then, I am, or rather was, a clerk—in fact, Secretary to the ——— Joint Stock Bank. Two years and a half since—I being at that time under twenty years of age—an abscess formed on the left side of the spine, without any apparent cause, as up to that time I did not consider myself to be particularly unhealthy. Having formed however, the abscess resisted all attempts at absorption, and after three or four months a regular opening was made, and the matter evacuated. As there was not the slightest evidence of decayed bone, hopes were then entertained that I should not be troubled with it again. In the course of a few weeks, however, the matter again began to collect, and I was sent to the sea-side, my surgeon in ——— recommending that on my arrival there, a free opening should be made with the knife. Well, I came down to G———, and the surgeon I employed here, holding a different opinion to my former surgeon, declined to make another opening, but endeavoured to create absorption by the application of salt water bandages, iodine, &c. The consequence was, that in two months there was more matter than ever, and it had found its way across the spine to the other side of the back. I then determined to have the opinion of some eminent man in London, and went up in the hope of seeing Sir B. Brodie; he being out of town, however, I took the advice of an eminent surgeon, Mr. ———, who recommended me to return at once to the country, have it cut, and, lying on the sofa for a few months, allow the system to throw off all this matter; the place would then heal up. In accordance with this advice, I returned to my native place, and placed myself again in the hands of Dr. ———. He at once used the knife, and made a cut nearly two inches long, and perhaps an inch or more deep. A piece of bone came out attached to the blade of the knife; whether it was a piece of decayed coming away, or the knife struck the bone, I cannot say. A few weeks afterwards it was deemed necessary to make another opening on the opposite side of the spine, and this was indeed a painful operation. The probe was pushed into the opening already made, across the spine, and as far over the right side of the back as it would go. An attempt was then made to cut down exactly to the point of it with the knife: failing in this, he had, of course, to slash about until the knife touched the probe. In a few months I apparently recovered; both sores continued open, but they might be said to have ceased to discharge, and I was led to expect they would soon close. Well, I fancied myself strong enough to return to business again, and accordingly I did so in October, 1859 (this was nine months after the first appearance of the abscess). After being at the bank a month, I was suddenly and unexpectedly struck down again, and in two days was worse than ever; my case apparently more hopeless. I gradually became very weak and emaciated, and suffered much: the only sleep I obtained was from the use of morphia; and the sores continued to discharge largely. About Christmas time. Dr. ——— came to see me from ———, and operated again, in the hope of discovering the source of the disease; for by this time it was evident there was disease of the bone somewhere. He, however, entirely failed in his object, and the only result of the operation was increased weakness. I continued in this state, without material improvement, but having constant medical attendance, until August. During the whole of that time I remained almost entirely in bed, and was caused additional pain by two large bed-sores, which formed on the hip, &c.; indeed, it was feared, at one time, that they alone would cause death. In August, I was again removed to this place, and have remained here since. Since I came here two fresh sores have broken out, making openings for themselves; one on the hip, and the other on the thigh—the matter evidently following the course of the psoas muscle. The discharge had at one time (about last Christmas) almost ceased, but there is now about a tablespoonful a day from all the places together; and, within the last three months, several pieces of bone have come away. I will inclose you a bit herewith for your inspection. I use no application outwardly, simply a dressing of cotton wool; nor do I take any medicines, except occasionally a tonic. Although there is a great improvement in me since I came here, nine months ago, and as I am seated, seem to all appearances quite well, yet, except under a change of treatment, I see no prospect of gaining *health*, or of the sores healing.

For three or four months I have been at a perfect stand-still, and this is the time when I anticipated making most progress. I cannot walk without assistance. One of the early effects of the disease was, to contract the right leg, and I have never been able to get it straight.

During the whole of my illness I have been allowed as much nourishing food as I could take, and port wine, porter, ale, &c.

I have now given you the principal points of my case, as they have occurred to me. I hope they may not prove wearisome to you; and I trust you will give me your candid opinion respecting the treatment as applied to my case, forwarding me, at the same time, your list of charges.

I remain, Sir, yours faithfully,

R * * * * *.

Major ———, from exposure and hardships abroad, returned to England a cripple, from rheumatism and general prostration. Bowels and kidneys of course could not perform their office properly. He was under eminent London medical practitioners, and the usual course was taken to *compel* action of the organs, until no action could be got but by artificial means. The poor emaciated patient had had no means tried which directly or indirectly aided the work of nutrition, but directly the reverse, and the usual consequences followed. Dr. J * * * *, celebrated for his attention to diseases of the urinary organs, could only relieve him by using the catheter; and soon after this anti-vital plan was commenced, the parts became so deadened that the patient never passed urine naturally; mucous and blood constantly came with the urine, and the odour was highly offensive. After he came to us he never had occasion to use the catheter at all; our comforting sitz baths, bandages, &c., brought life again to the organs, and they acted naturally. He left us greatly improved in his general health, and it he could have staid would have lost his rheumatism. He was told in London the bladder and kidneys were diseased, but the offensive odour of the urine and the mucous and blood soon disappeared under our treatment. It was the constant use of artificial means to *compel* the organs to act which had so damaged the mucous membrane lining and the nervous power. I told him soon after he came he had no disease but what had been caused by the unnatural use of the instruments, &c.; but until he got quite restored he could not believe me, seeing that such high authorities had given an opposite opinion. Facts, however, convinced him.

At the moment I am writing this a letter comes in, marked—"*Immediate*," as follows:—

"REGENT STREET, 16*th January*, 1863.

"MR. SMEDLEY,

"DEAR SIR,—A gentleman friend of mine was taken ill the early part of last year with hemorrhage of the bowels, which ultimately brought on ulcerated bowels. Was attended by a physician and surgeon, who, after a long attendance upon him, ordered change of air. He went to Yarmouth for two months, was partially restored, and went to business again. In October last took cold from wet feet; had again to call in the physician and surgeon for the same complaint, who, after all these weeks of attendance can give no relief, but say his liver is now affected. His friends despair of his life. He is a young man, with a small family. We have advised his removal to Matlock for months. He thinks it would do him good, so do some of his friends; 'but they are afraid he is so weak that if anything should happen to him on the road the doctors would say it was their fault, and they killed him; although he is getting worse and worse, and we feel sure must die.' Can you give us any hope that the treatment practised at your Establishment would be beneficial in his case? They are people of good circumstances, and money would be *no object* if his health could be restored. We have lent them your work upon Hydropathy; they partially believe it, but *are afraid* of the *doctors*. Trusting, Sir, you will answer at your earliest convenience."

Now mark the usual course in such practice. After trying various authorised "*remedies*," according to the London Pharmacopœia, and finding the patient sinking, he is sent to the sea-side, the doctors seeing that he must soon die under their active "remedies," and they think a change, and leaving the patient without physic, and a little to Nature's care, the only chance of life. Now such cases we do not send away, and leave them to Nature, for we know Nature is too prostrated to raise her powers without aid; but until the sound theory of Dr. Chambers, Dr. Anstey, and others, is *acted upon*, and no means used but such as aid the work of nutrition, the poor diseased frame must succumb under drugs, blisters, &c. &c. As to poor infants, drugs soon extinguish the little vitality they possess, and no wonder so many die in infancy.

The following case I sent a bathman to bring to my establishment. I see no reason to doubt his recovery. He is already benefited; but as this is going to press, I cannot say more:—

"MR. SMEDLEY,

"SIR,—I have taken the liberty of writing to you respecting my father, who is now ill in bed; and I have been recommended to you by one who has been under your treatment. He has been examined by three medical men, who said it was piles; but the physician and surgeon have since said that it is not piles, and that they could not cure him; and so now he is neither getting cured or relieved.

"The symptoms are these: for about a year he has had great irregularity in his bowels, but took no notice of it, but took opening medicine, and continued to get worse, and gave up work because he became so weak. He has no natural motion, but is either costive or the other extreme, and accompanied by blood; can scarcely take anything, and when he does so is filled with wind; and also has a constant pain in the lower part of the body, sometimes very severe.

"My father is a farmer; has been a very temperate man, very rarely taking alcoholic drinks; is fifty-eight years old, and has worked hard all his life; he once had the ague, and I feared it would return, as he had a severe attack last week, which prostrated him for several days. Of course we are extremely anxious to try every means for his restoration; and I believe, *if* he could be conveyed to your establishment, it would be more likely to prove beneficial than anything else; but I thought it best to acquaint you with his state before taking any further steps. I shall be very much obliged if you will say whether it would be advisable to bring him (I believe I omitted to say that the doctors thought it would prove to be a cancer, but did not tell him so; but I think not, as his state answers to the description given in your 'Practical Hydropathy' on Piles—he has two or three separate substances forming in the lower part of his body). If you think he should come, a difficulty will arise as to how to bring him, he is so weak, and the distance so long (seventy miles about), and the closet almost constantly employed; and unless the journey can be accomplished quickly, he will fail in the undertaking.

"I must apologise for taking up so much of your time, but I am extremely anxious about father; and, if you consider it a case in which you can succeed, I will try to bring him.

The following case came and is rapidly being cured. The ailment has been brought on by the physic and operations.

"MR. SMEDLEY,

"DEAR SIR,—I feel convinced that you will give me an answer to this letter, because I believe that you are a well-wisher of mankind generally. I want to describe a complaint to you that has troubled me for two years, and is at the present time baffling the skill of one of the cleverest doctors in S———, at the Infirmary. Such is my opinion, judging from his proceedings. But I fear that I shall give offence with my rough and indelicate way of expressing myself; yet duty to myself and family bids me try and do my best.

"I think that some kind of a disease of the seat, or rectum, is the complaint that has troubled me for so long a time. During the year 1861 I and many others thought I had the piles inwardly. Being ignorant of the fearful effects of purging medicines, I took such medicines for six months more or less, in order to get easy motions. At the end of the first six months, I had distracting pains each side of my head, and was not able to do anything, not even walk about the house. I became alarmed; thought I had got the brain fever, so sent for the doctor. I told him of the pain I had in my head, and of the piles inwardly (as I thought). He tried to give me ease in my head, but failed until the tenth day; he then ordered me hot flannels—half water and, I think, half vinegar. I had then a few hours' ease, but the pain very soon returned, and has never left me, more or less. I have great pain in my head while writing this letter; in fact, I have never been without for the last eighteen months. He never mentioned the complaint that I told him of inwardly, so I have concluded that the first doctor began at the wrong end first. During the month of December, 1861, I was in a fearful state at my seat; I had, as it were, to bare my seat, or it was like opening a wound before I could get a motion. I could have screamed with pain during every motion for a month. A friend of mine would have me try injections. I took one every night for three weeks; I felt quite overjoyed while taking them. I kept thinking I was all right—quite cured; however, if I was not cured yet, I gained much strength, and felt another man. In March, 1862, I was as bad as ever. Dr. H——, of S———, gave me his advice free for about five weeks; he did nothing but purge me. I felt weaker after being under him for the five weeks. In April, 1862, I began to diet myself more than ever, having no faith in doctors. I cast aside entirely meat, pastry, and white bread, and sponged myself night and morning, from April to the present time. I have lived on cocoa, gruel, new milk, a few potatoes, eggs, and the best flour with bran in it. In September, 1862, I was prevailed on to try our Infirmary. I was under Dr. B——, and am at the present time. I wish you to mark him, me, and my complaint at this particular time. I thought that he had found out my complaint, was going the right way to work, and that I should be speedily cured. 'What is the matter with you?' said he. 'I think I have the piles inwardly, sir.' 'Do they come down?' 'No, sir; I can feel a little of something just inside my seat when I have a motion, but nothing hangs down.' 'Is that all the reason you have for thinking you have the piles?' 'Yes, sir.' He gave me some medicines, and sees me every Saturday. I was no better the third Saturday. 'Go to No. 6 ward,' said he, 'and I will examine you shortly.' 'This is going the right way to work,' thought I. He came with a young doctor that is in the house. I knelt on the bed with my head down. He passed a bougie, which hurt me a little, thinking of finding a stoppage. 'I can feel no stoppage,' said he to the young doctor. 'Indeed!' 'No. That will do, my man. Have you much straining?' 'Yes; a deal. My motions come through me like marbles or nuts, which sometimes break the skin, and causes me great pain.' 'Well, try this medicine, and see how it acts with you. In about three weeks after the first examination, he examined me again. The day before he examined me a second time, I had a very strong motion, which broke the skin very much. I told him of this. 'Go into No. 6 ward; I will examine you again.' He got some oil, and pressed up the rectum, perhaps thinking my seat was down with having much straining the day before; this caused me great pain. 'Does it hurt you much?' 'Very much. If you will look, I think you will see where the skin is broken. 'Turn round,' said he, 'to the light. Oh, I see. Look here, Dr. B——' (the house doctor). 'I will soon have that right,' said Dr. B——; 'fetch me that instrument.' 'Are you going to cut me, sir?' 'Well, there is a crack. It is not deep enough; I want to make it deeper.' 'I am afraid to be cut there, sir.' 'Very well. This is no prison—you can please yourself; but neither dieting nor all the injections in the world will cure you.' He spoke very kind to me the above words, and then left me—of course very sad. Dr. B—— is of high standing in S———. Many advised me to make up my mind, and let him operate on me, which I did. I went the Saturday after; he was ill. I went again the following Saturday. 'Well,' said he, 'there is not a bed at liberty.' 'Shall I have to lay long in bed, sir?' 'It would be as well for you to lay in bed quiet for two or three days.' This alarmed me very much, indeed. My wife and mother advised me to try a friend for a little money, and have Dr.

B—— at home, it might lead to an abscess; which I did. Dr. B—— visited me at my home on Friday, the 21st of this month. He examined me (you must bear in mind that three weeks had elapsed since he turned me to the light, and saw the skin was broken). 'Why, it is nearly healed where the skin was broken.' 'I dare say,' I replied; 'injections have healed the place often.' 'Well, I don't object to them, but your bowels are rather too much confined at present; I cannot see far enough. Take a little castor-oil on Saturday night, and I will visit you on Sunday,' which was the 23rd. He got some oil, and pressed with his finger very much each side of my seat, and upwards as well, which was very painful. He conversed with me about eight minutes, and thought there was no need of an operation, since it was healing up nicely. He said, 'If hard motions or formed motions break the skin, what you have to manage is to get soft motions.' 'I cannot unless I purge myself, and continued loose motions make me weak;' but he could not think so, and thus ended the operation. He says he cannot feel anything, and if I go to the Infirmary to-morrow he will pass a bougie. I have had an injection every night this week rather than purge myself, and I feel a deal stronger in myself, yet every motion comes through me as round as marbles. Something presses downwards, and feels very unpleasant, besides taking all the strength I have to keep it up, even with injections. I am very uneasy in mind, because I cannot get to know what is the matter with me. Dr. B—— says it is not a stricture, and that it is nothing relative to either an abscess or a fistula, yet he does not say what he thinks it is.

"I have got the third edition of your 'Practical Hydropathy. I keep thinking that a certain treatment of bathing or sitz would set me right once more, and I came over to Matlock for a day last August, for the purpose of asking your opinion, but you had left the baths an hour when I arrived. If you will favour me with a letter containing your opinion of my complaint, and your advice also, I shall ever feel obliged to you.

"Yours, &c.,

"*November* 28, 1862. "G—— G——."

Case of severe dyspepsia. Liver and brain congested. From a residence in India thirteen years, which quite incapacitated him for any business, and he had given up all hopes of regaining health:—

"*6th July*, 1862.

"DEAR MR. SMEDLEY,

"I have delayed writing to tell you how I was getting on till I saw if my cure should be permanent. So far I am happy to say that I keep quite well, indeed better than when I left you, and by the end of summer I shall be better still. I still keep up a little of the treatment, and find it keeps me in perfect health. Your book is now my handbook of health, and a very safe one I find it.

"Now I am on my way north, and I fear I shall have some difficulty in getting what I want in the way of baths; in London I found none. I find I can get any sort of wine from any part of the world, but a little clear cold water in a sitz bath is a difficulty, strange to say; and the further north I go I fear the difficulty will increase. Would you, therefore, put up for me a sitz bath and blanket, a lamp and India-rubber petticoat, or sort of cloak for sweating, a chest compress, and one of each of the other sorts for the stomach, a sheet of India-rubber, and anything else that you think I shall require. You will be good enough to forward these at your earliest convenience, as I shall be in Scotland next week. If you can spare time to write any advice, I shall be glad to receive and treasure it.

"The *Africa* has arrived at Queenstown, and brings most exciting accounts, which you will learn from the papers before you get this letter. Your former predictions are coming pretty true. I wish I had bought cotton when you advised it; it is pretty clear that we must not look for cotton from the States for long, if ever; and India cannot give us what we want.

“Trusting both Mrs. Smedley and yourself are well, and with kind regards,

“I am, dear Mr. Smedley, yours very truly,

“A. R * * * * * .”

The following was a case of severe nervous prostration, from overstraining the mental powers. Liver, stomach, and bowels, greatly deranged. All the usual doctors' remedies had been tried, to compel the organs to act, and to give power to the brain, but the more the doctors tried to *make* them act, the more torpid they became, as a natural consequence of the use of calomel, blisters, &c. &c., until, in despair, he came to us, and the following letter is the testimony he gives us to our comforting treatment. His brother's case was one of severe chronic inflammation of the bowels of long standing, and every means the doctors had used only helped to aggravate the disease. He had long had frequent discharge from the bowels of blood and mucous, but by our simple plans he got well. His case was considered quite hopeless of cure before he came to us:—

“LIVERPOOL, 12*th January,* 1863.

“MR. SMEDLEY,

“MY DEAR SIR,—Since leaving your establishment in June last, after remaining there six or seven weeks under treatment, I consider it right to address you, and do so with the greater confidence, a considerable time having elapsed since my return home. I went to you early in May, suffering under severe nervous depression, of long standing (the effect of sorrow, and too much application to business). For over three years I seldom had *natural* sleep, and my spirits and nervous system were constantly depressed and unstrung. Previous to my leaving, you said it would take me twelve months ere I became quite strong, and I believe (D. V.) your words are proving correct, for I am month by month getting better in all respects. I look back to the time spent with you as one of the happiest of my life, and truly feel that I left Matlock a wiser and healthier man. Far as I can I practice your system at home—*i. e.*, far as *sitz* baths and general bathing are concerned. The sitz, five or six minutes, a little over tepid; then run down to nearly cold one minute. I find it MOST refreshing, and use it constantly (almost daily). I have, since with you, become a water drinker, and *never* since used tobacco in any way. I used to smoke moderately, and assure you I found it *very hard indeed* to break myself of its indulgence—even to this day. If in society where smoking is going on, I feel an *all* but *un*controllable desire to resume, but have been firm so far. *Your* system has my most ardent wishes for an increase in number of its disciples; and in my own small circle I do all I can to co-operate in adding thereto. If all be well with me, and circumstances permit, I hope to go to you during the summer for a short time.

“My brother, who went with, and remained after me, had no return of his complaint (dyseutery, contracted in the East Indies) since he came from you quite sound and well. I may truly say *you were the means of saving his life.* He has gone out to China, and, before leaving me, promised to write you when he got to Shanghai. I trust that you and Mrs. Smedley continue well. Will you make my compliments to her, and accept the warm regards of

“Dear Sir, yours truly,

“* * * * * .”

I have since received a letter from him from China, saying his health was completely established at our establishment, and has never failed since.

Case of dyspepsia and skin disease, which had for many years defied all the doctors' remedies :—

"*23rd October*, 1862.

"Dear Sir,

"It is seven weeks since I left your Establishment, and I would have written sooner had it not been that I wished to have something definite to say to you respecting the state of my health. You are aware that I left as soon as I was able to bear the fatigue of travelling home ; and, notwithstanding this, I have only been absent from business two days since my return. I am sure this will be gratifying news to you, as I can assure you the results are to myself. I am fully satisfied in my own mind that but for the treatment I have undergone at your place, I should have been totally unfit for any business; and, as I have before told you, I had no hope of cure from allopathic treatment, having given that a fair trial. I am only sorry I did not find my way to you some years ago, but better late than never.

"Since I came home I have been gradually getting stronger. Every morning I take (on rising) No. 95, with 204 occasionally; at night, No. 94. I have had 51 once; 59 twice; 35½ three times; and sometimes 99 since I came home. Taking into consideration the bad state I was in when I applied to you, and my low state of vitality generally, I think I have every reason to be fully satisfied with my present state, and hope, by care and perseverance, to be fully restored to health again.

"I will conclude this note by expressing my deep sense of gratitude to you, as a means, under God's blessing, in restoring me to better health than I have had for some years, and hope that God will long spare you and Mrs. S., and enable you to continue your efforts in ministering relief, and restoring to health many of your fellow-creatures, who, like myself, have failed in obtaining it elsewhere.

"I am, dear Sir, yours respectfully,

"W. D———."

"*October 30th*, 1861.

"Dear Sir,

"In duty bound I ought to have written to you before this, to tell you how I was getting on; however, I may mention as the reason my desire to let some little time pass over, by which I might really see how my health might turn. I do believe that it is your pleasure at all times to hear of the welfare of those who may have been at your Establishment at Matlock; and, as one of those, it is my own pleasure to write to you, associated as the mind of my wife and my own are at the present moment with feelings of gratitude to God, above all things else, because without his blessing all means are vain.'

"I am glad to inform you that my health has steadily continued to improve ever since our return home, and I am as firmly convinced that the treatment I had from you was a real benefit to me as that I exist, or any other person whom you ever had under treatment. I certainly occasionally experience irregularity of the bowels, but the bandage I find for a day or two to be quite enough in meeting that. In connection with this I also found the use of stewed fruit very useful ; and, I am happy to say that other than this mode of proceeding, neither my wife or myself have had occasion for a single grain of medicine. I attend to business daily, taking care to observe those rules which you lay down in the good and valuable book which you so kindly gave to me when at Matlock.

"With kindest regards to Mrs. Smedley and yourself,

"I remain, gratefully, dear Sir, ever yours,

"J. M. C———, Chemist."

"J. Smedley, Esq."

From a Clergyman:—

"MANCHESTER, *Sept.* 10, 1862.

"MY DEAR SIR,

"After having a little breathing time, I feel myself bound by every consideration to return you and Mrs. Smedley my most sincere and heartfelt thanks for the kind interest you manifested on behalf of myself and my dear wife, at a time and in circumstances when we peculiarly needed the assistance and sympathy of friends. The old proverb says truly, that 'a friend in need is a friend indeed.' Such friends we have found in you both, when on the point of being crushed by affliction and other adverse circumstances.

"The treatment, under the guidance of yourself and Mrs. Smedley, has been to us both like life from the dead. My dear wife, as well as myself, feel quite renewed, and we hope permanently restored to health. I waited four days before writing, to see how we would feel after coming home, and I now rejoice to tell you that we both *continue* strong and healthy. Now and then I feel this week a little of the old headache, but a cold sitz and cold foot bath carries it soon away. Neither of us have felt so strong and comfortable for *many many* months as we have felt since our return from Matlock Bank. Both of us carry on the treatment at home, as regular and as near as we can to the directions we received.

"When we were both going to Matlock Bank the first time we felt very low and disheartened, having been both of us so long under the doctor's hands, and received so little benefit from them, that we were very near giving up all in despair.

"Now, my dear Sir, whatever circumstances it may please Providence to place me in henceforth, you may rest assured that your kindness, and that of Mrs. Smedley, will never be effaced from our hearts, and we shall ever retain a most grateful recollection of your willing service to us in the hour of need. My dear wife begs to join me in sending her grateful acknowledgments to you both. Our sincere prayer is, and shall be, for the Lord to bless and reward you both most abundantly.

"I remain, my dear Sir, very respectfully yours,

"* * * * *."

"JOHN SMEDLEY, ESQ."

"SHEFFIELD, *Dec.* 19*th*, 1862.

"J. SMEDLEY, ESQ., Lea Mills.

"DEAR SIR,—I beg to return you my heartfelt thanks for your great kindness in permitting me to sojourn for a time, and undergo hydropathic treatment in your free Hospital at Lea Mills. It is rather more than three years since I was struck down with rheumatism, and for a time it appeared extremely doubtful whether I should recover or not. I was brought wretchedly low by allopathic treatment, and was reduced as near to a skeleton as I think it possible for a living man to be brought. I then tried homœopathy, which failed to drive the complaint out of my system, although I derived very great benefit from the diet prescribed. Weary of medicine and treatment, I tried change of air, and experienced much advantage from it; but still I was liable to severe attacks of my complaint, and have been laid aside in wet and cold weather for a week or two, and sometimes for a month. At length I made application to you, and I cannot sufficiently express my gratitude to the Almighty, and to you, sir, for the benefit which I have derived. After so long and dreary a season of prostration, the possession of health and strength is delightful; and it is my firm resolve to use these re-given blessings to the glory of Him whose you are, and whom you serve.

"I have allowed a week or two to elapse after my return home, before writing to you, as the report of my renewed health would then be more satisfactory. My appetite is good, body vigorous, and general health excellent. Occasionally I feel rheumatic pain in my shoulders, more especially the left one; but I suppose that I shall gradually get rid of this. On the day I left your hospital I walked to Sheffield (twenty-eight miles), and was pleased to find that I could thus accomplish the journey with very little fatigue. My little ones have had the measles since I came home, and, by attending to the directions contained in Mrs. Smedley's Manual, they have been brought nicely through them, without a spoonful of medicine.

"With grateful thanks to you and Mrs S., and praying that you both may long be spared in the enjoyment of every needful blessing,

"I am, dear Sir, yours faithfully,

"J. N. S——."

Case of thoroughly deranged health, which all the allopathic remedies had only aggravated:—

"MOUNT AUBURN, CINCINNATI, UNITED STATES,
"21*st September*, 1860.

"J. SMEDLEY, ESQ.

"DEAR SIR,—I left England ten days after I left Matlock Bank. Had a pleasant passage of eleven days to U. Y. My health is now quite restored, thanks to the good Shepherd, and you, his honoured instrument. I shall always remember my visit to Matlock Bank with gratitude. I called at the Waterloo Hotel, Liverpool, for the book you kindly offered to send there for me, but it had not arrived. We would be glad if you could make it convenient to visit this part of the world, and bring Mrs. Smedley with you. and stop with us a month or so. You will see many new things, and crossing the Atlantic is a good amusement. If you find time, let me know how you are, and how your concerns prosper. Remember me to my Matlock friends, and accept for yourself my best wishes.

"J. M——."

January 13, 1863.

"MR. SMEDLEY

"DEAR SIR,—I am much obliged for your kind and prompt attention to my note of the 9th instant, and I assure you I shall be glad to have the sheets.

"You taught me a good deal during my short residence in your establishment. and I have since derived considerable benefit from the practical application of what I learned, and am continuing to enjoy my cold sponge bath and sniffing bath every morning, and occasionally my bandages; in fact, by these means, and attention to diet, clothing, and regular living, with God's blessing, I keep in very tolerable health, and am able to fill my post in business and be a useful member of the community, although at one time I despaired of ever recovering from my affliction or chronic affection of the larynx.

"Thanking you for your kind attention,

"I remain yours sincerely,

"C * * * * * * T * * *."

The following case was brought to my establishment in a state of great nervous excitement, from severe dyspepsia, and the usual aggravation by purgatives, &c. He had a short time previously twice attempted suicide. He left cured of his disease:—

12*th April*, 1860.

"DEAR SIR,

"I have great pleasure in presenting my sincere and heartfelt gratitude to you for the extreme kindness shown me during my stay at Matlock Bank, and think that I shall ever be indebted to you for it.

"I feel quite assured, from the deep interest you took in my welfare, that you will be glad to know that my health is very much improving, and that I am experiencing the truthfulness of your kind remarks to me from time to time. They were as follows: that I should in future life, in all probability, be better in health than I had been for years past. I may say that such is the case, and that, in consequence of your very excellent treatment under the hydropathic system, and the blessing of God resting thereon, I feel there is a basis for future health laid that I have not felt for years past; and I do hope that you will accept of my most sincere thanks, which I feel in duty bound to present to you.

"I have many pleasing recollections of your instructive and very telling remarks at various times; of the very delightful influences I experienced at the reading of the Sacred Scriptures; and the gathering of the family circle night and morning, which, I doubt not, will have their effect for good in the long round of eternity, which I pray from my heart may be the result; and that in the eternal world of joy you may receive the reward of a crown of glory that fadeth not away, and find many—which I doubt not you will—of those who, through your instrumentality, have been led to a saving knowledge of the truth as it is in Jesus.

"Hoping you will excuse the liberty I have taken, allow me to remain,

"Yours sincerely, dear Sir,

"J—— B——.

"J. SMEDLEY, ESQ."

"REGENT STREET, L——, 6*th March*, 1860.

"MY DEAR SIR,

"On leaving your establishment, Matlock Bank, about the close of December last, I believe I promised to write you to say how I was going on.

"I am persuaded that you will agree with me in admitting that, for all blessings received and enjoyed, our *first thanks* are due to the 'Father of Light,' from whom cometh down 'every good gift and every perfect gift.' But, next to this, I feel that it becomes me to say that I have inexpressible cause to be thankful that I was influenced to spend six weeks at your Hydropathic Home. For about two years previous to that visit, this life, both within and without me, was one unrelieved, distressing, miserable blank; to me devoid of either comfort, hope, or joy. But, blessed be God, how different—gloriously different—when, at the close of six weeks, I left Matlock Bank! My residence there was just the thing for my case.

"At Matlock, in connection with the 'water treatment,' I met with that mental repose, cheerful society, exercise, diversion of the mind, and kind, encouraging treatment from others which I so much needed; and, by the blessing of God on the means used, I came home, as they here told me, a *new man*. My mental and nervous vigour seem to have been quite renewed, and the entire tone and action of the system appears to be better than it has been for the last fifteen or twenty years. Without speaking in the spirit of vain boasting, I believe I may say, in truth, that I can both study and preach with greater facility and ease than I ever could in my life before, and yet I had given all up for lost. How good the Lord is!

"Since my arrival home I have continued especially the head-baths, with the body-bandages, with much rubbing of cold water behind the ears. It is great cause of further thankfulness that, within the last two months, my hearing, which you will remember was very defective, *has greatly improved.* I can now, without particular effort, hear sounds and conversations which I have been deprived of for some years. I continue to use the baths; and my general health and hearing seem still to keep improving. Well, while we are thankful for human means, we must *give God all praise and glory.*

"Permit me, before I close, to express my satisfaction, and pleasure, and profit in the family and religious services which are held in your establishment. They seem specially valuable and *dear to me*—no doubt, because it was in connection with them that I began to feel relief from that 'horror of great spiritual darkness' that had so long and so miserably oppressed me. It was then that, in singing and prayer, and reading the holy Word of God, I began to feel the spring and return of those inward spiritual consolations and joys that convinced me God had not forsaken me, and that life was still an invaluable blessing, and particularly so as a preparatory course for a higher and a better state.

"I was pleased with the generally apparent attention and sincere interest which the patients took in the worship of God.

"I am, my dear Sir, very truly yours,

"S—— B——.

"J. Smedley, Esq."

NOTES WORTH CONSIDERATION.

At the risk of tiring the patience of my readers with the contradictions in medical practice, and of confusing their ideas on these subjects, I give the following from the *Medical Journal*, Feb. 21, 1863, showing what entire and perfect disagreement there is between the most eminent medical professors on the very grounds and foundation of practice. They are, in these times of advanced knowledge, unable to agree on general principles; and this being the case, they have no common, fundamental principles to act upon. Dr. Chambers, Dr. Anstie, Sir John Forbes, Dr. Conquest, Sir B. Brodie, appear all to have found by experience that life is not to be sustained by Dr. Beale's remedies of counter irritation, &c., and they come to the natural and sound conclusion that what will not aid the vital principle of the body will not enable a diseased organ to throw off disease; and that it is only by aiding nutrition—increasing the vital powers of the blood-making organs—that any hope of restoration to a healthy state can be expected. But, as I have remarked before, that while holding this common-sense, sound doctrine, they yet teach students to purge, vomit, blister, seton, and issue the poor diseased or weak frame; and, as it will be seen by Dr. Beale's attack on Dr. Chambers, Dr. Beale makes the absurd statement, that to destroy disease, the life of the body—the vital functions—must be lowered, and consequently the blood-making powers and functionary action of the stomach, the liver, kidneys, bowels, brain, and whole nervous system, must suffer, as all the frame, it is obvious, must sympathise together. Dr. Beale talks of destroying the life of a cancer by lowering its action; but what means does he propose but those which necessarily injure the whole animal economy. And as to destroying the life of a cancer, the common-sense view of the case, one would suppose, would be to try to get good blood, and good circulation, and nervous vitality to it, with a view to give power to the part to conquer the morbid action—the only way to restore health to the part. This, we see constantly, is the case with the numbers who come to us with diseased limbs, or ulcerations, or congested organs, internally and externally, and by our poultices, our fomentations, our spongios, and wash-leather bandages, and various similar applications to the diseased parts, arterial blood is determined to the parts, nervous vitality is increased; and as sure as guano tells upon vegetation, and turns poor grass into good, and destroys bad grass, so the true regenerative principle acts when good blood is determined to any diseased organ. It may be asked, How will this apply to congestion of the brain, or liver, or any organ? Dr. Beale says he aims at diminishing the supply of blood to a congested part to allow the organ to recover; but if this could be done, it can only be attempted by weakening the vital action of the part—and, as a matter of course, not only that part, but every other part—he is positively preventing life to the organ, not aiding it. Dr. Chambers and others have hit on the plain, fundamental, common-sense view of the nature and cure of disease—that deficiency of vitality is the cause, and the true remedy is, to use no means but what will aid nutrition and vitality. Dr. Beale and others are for doctoring the organ alone and *making it act*, ignoring the obvious fact that if one member suffers all suffer, and one part cannot be cured but the benefit of such curative means must extend to the whole frame. We find by applying Dr. Chambers's and others' sound principle, of using no means to remedy disease but what directly or indirectly aids the work of nutrition, successful; and, by our leg and foot-baths, by our stomach and liver packs, by our tepid dripping sheets, by our vapour-baths and wash over after, we look to stimulating the whole circulation, while, at the same time, by the local packs as above, we reach individual organs, comforting, stimulating, and nourishing them, and the whole frame feels the comfort at the same time. This is a very different affair when the horrid system of torture from the chemist's shop is prescribed.

Medical practitioners appear to ignore the fact of nervous vitality being the basis and cause of action of every organ and every part of the frame, and for want of this consideration arise the terrible effects of drugs, blisters, &c. An artery cannot propel the blood, but by nervous vitality in the structure of the artery, as shown in the cut, page 312 of this work, the liver, as observed in this work, only acts in taking out the impurities of the blood by nervous vitality; and the gall is deposited in the gall bladder by the force of nervous vitality, and again the gall is expelled from the gall bladder into the bowels by the same nervous power, and so by every function. Now all purgatives, blisters, bleeding, &c., lower this nervous vitality, and consequently the power of the organs to do their office. I hear it often said doctors do not administer so much physic, nor bleed and blister to the extent formerly practised; but I ask what remedies they have but these anti-vital measures; and if they have lost confidence in them as they go on in practice, and give less and less, why do they not see if they cannot discover remedies for diseases which do not begin by taking away what is wanted—more vitality.

What a censure it is on the practice of the medical faculty when cases of ulceration, old injuries causing congestion and decay of parts, and various chronic diseases, come to us and get cured, after resisting all the efforts of the most eminent of the medical faculty. And yet we have had no medical education, nor any previous training in hospital practice, nor can we lay claim to any more than ordinary knowledge of the business of life. The fact is, we act upon Nature's own principle of restoration, and it succeeds. Only last week, a gentleman, aged fifty-four, came to us with a bad leg from an injury fifteen years ago; and, as expense was no consideration, he had tried the faculty, but in vain, his leg remaining discoloured and inflamed, and the disease getting up into his thigh, he became alarmed. As soon as I saw the case, I could tell him with confidence it would give us little trouble to cure him; and in a fortnight the disease was subdued above the knee, and the injured part perfectly easy, and showing how Nature was rapidly bringing nutritive blood into all the small veins which had been so long closed. Such cases, at even advanced periods of life, never fail of being cured, if they will give reasonable time; yet bad legs or arms are the opprobrium of the medical profession. I wish, however, to add, ours is not the "cold-water cure," for cold water will certainly never cure such cases.

(*The following is the discussion alluded to, page* 32.)

WESTMINSTER HOSPITAL.—INAUGURAL ADDRESS BY DR. ANSTIE, OCTOBER, 1862.—(*From the Lancet.*)

"THE concluding portion of the address was occupied with a slight sketch of the present state of pathology and the tendencies of modern English therapeutics. Great and important changes had taken place of late years in both these branches of medical science, and the late Dr. Todd was eulogised for the conspicuous share which he took in these movements. It was unfair to the memory of that great man to associate his name with any special system of medication; his real merits were to be found in his constant and successful efforts to procure an acknowledgment of the fact that it is Nature herself who performs by far the most important part of the work of cure, while the physician is only her humble servant, who should be always reverently watching her movements, and, if necessary, aiding the efforts which she herself makes. Allusion was made to the further development which these ideas have received at the hand of Dr. Chambers, who has propounded the theory that all disease consists in a deficiency of vital power, and therefore that all true remedies must be such as directly or indirectly aid the work of nutrition. Whatever might be the ultimate verdict on this theory, it was certain that an immense number of facts, both in physiology and pathology, which have latterly become familiar to us, appear to give it a general support. The discovery by Virchow of the similarity between an immense number of morbid products and the lower kinds of healthy tissue, fortified as it is by the recent observation of Rindfleisch that the development of tubercular matter in the brain of the child presents many points of resemblance with that of the so-called connective tissue; the important observations of Kussmaul and Tenner on the production of epileptiform convulsions by the abstraction of arterial blood, and the development which this fact has received at the hands of Dr. Radcliffe, who has demonstrated the superiority of the nutritive treatment of convulsive disease over every other plan,—these and a host of other facts seem to be leading us in the same direction. It is most important, then, for the student to understand that his attitude must be one of vigilant and earnest inquiry into the phenomena of Nature, and searching though respectful investigation of all therapeutical traditions which have come down to us. There must be nothing of the spirit of perverse and insolent scepticism in this; such a spirit is far more likely to be found among the blind adherents of doctrines which they have never had the courage to test."

SHORT CLINICAL LECTURES BY DR. BEALE, PHYSICIAN TO KING'S COLLEGE HOSPITAL.—*See* "MEDICAL JOURNAL," February 21, 1863.

"Recent careful observation has compelled us to doubt if many remedial agents which have been held in the highest repute really exert the influence which was formerly attributed to them; but of the benefit of counter-irritation few practitioners have any doubt. Indeed, until I recently read a lecture of Dr. Chambers's, I thought we were all agreed, not only with respect to the beneficial action of this plan of treatment, but also as to the principle upon which it is enforced. I have always been taught that by counter-irritation we seek to establish an increased action in one tissue or organ, for the purpose of diminishing an increased action which is taking place in another tissue or organ, the due performance of whose function is of great importance to the organism.

"Dr. Chambers, however, tells us—but I think few will agree with him in his statement—that the idea of counter-irritant practice is to substitute one *disease* which is less 'dangerous and painful, or whose disorganising tendencies are but temporary, for another *disease* which may be dangerous or painful, or which tends to disorganise the body;' and yet the author of the *Renewal of Life* has admitted, as examples of counter-irritation, purgatives to relieve a cold on the chest, and excessive diuresis for dropsical swelling! Are ordinary temporary purgation and excessive diuresis diseases? After stating that it is probable that 'future physiologists may be able to explain in another way the instances which *seem* (!) to favour the system,' he says that 'in the meantime it appears unwise to adopt, as a principle, the estimation of the utility of our drugs by the power they possess of making a sound man ill' (!). Now what does the word 'ill' in this sentence mean? When our bowels act a little more than usual; when we pass four pints of urine instead of two in the twenty-four hours; when we perspire freely; if we apply a turpentine stupe or a mustard poultice to our sound and healthy skin,—do we necessarily become ill?

"The idea of counter-irritation clearly is, not *to establish one disease for another*, but to increase the action of one or more tissues, with the view of reducing the increased action which is already going on in other and more important tissues or organs.

"It seems to me that much of the obscurity which occurs when an attempt is made to account for changes, and to explain various actions, results from the effort to define the *diseased* as distinguished from the *healthy* state. The best plan, therefore, in discussing morbid actions and changes is simply to try to ascertain with accuracy what *is* going on, and contrast it with what physiology teaches us *ought* to go on.

"If we make an attempt to define exactly what is meant by the substantive *disease*, or by the adjective *morbid*, great confusion must result; and for this simple reason, that we cannot separate by any distinct line healthy actions from morbid actions, or the *healthy state* from the *diseased state*. Of course, a small contracted liver or kidney, doing one-tenth of the work healthy organs would do, and exhibiting the most obvious alterations of structure, are diseased. They have, however, not passed suddenly from the healthy to the diseased state but by very insensible gradations, so that, had you seen the organs in an early stage, you would not have been able to point out any differences by which they could certainly have been distinguished from healthy organs, although, had you examined the secretions formed by them, you might have obtained evidence of change in quantity or quality. Up to a certain point, although there may have been excessive or deficient action, you could not have spoken of the condition as one of disease.

"Nor can we define disease as increased or diminished action—increased or diminished vitality; for in some diseases tissues grow too fast, in others the structures or organs are reproduced too slowly. Disease may consist of an *excess of action*, or there may be *deficient action*. The tissue may live too fast, or it may undergo its changes more slowly than in health. There is in many morbid structures or products a greater activity, a more rapid conversion of pabulum into living matter, than in health. A certain bulk of epithelial or other form of cancer, or of pus, or of the lymph occupying the air-cells of a pneumonic lung, exhibits greater evidence of vital activity than the same bulk of healthy tissue. It grows faster; it appropriates nourishment faster; and this nourishment more quickly becomes converted into tissue, or is transformed into compounds, totally different from those existing in it before its appropriation, far more actively than in a normal tissue. *The conversion of inanimate pabulum into living matter, which in health takes place under certain restrictions, takes place in these instances under restrictions very much diminished.*

"To say, then, that 'disease is not a new excess of action, but a deficiency; not a manifestation of life, but partial death'—is stating that which is opposed to most important facts of general observation, and is strangely at variance with the facts demonstrated by very many observers in the present day.

"Nor can I agree with Dr. Chambers in his statement that 'the business of the physician is directly or indirectly not to take away material, but to add; not to diminish function, but to give it play; not to weaken life, but to renew life.' We very often desire to take away material, as when any organ is the seat of greatly-increased action. We try to get rid of the lymph in an inflamed lung, the matter poured out into the areolar tissue and other tissues in inflammation, or into the joints and fibrous tissues in gout and rheumatism. Not only so, but the blood itself often contains matters which we desire to get rid of; so that we really often have to take away material; and if we could but diminish the supply of blood to many organs at the right moment, and for the right time, we might possibly prevent a diseased action from being developed. (*But Dr. Beale knows this is impossible.*)

"So, again, it seems to me that we really do often desire to diminish function. When an organ is deranged, is it not a principle established by experience, and does it not accord with common sense, to try to *diminish its action*, and make some other organ do its work for the time? (*When an organ is struggling to retain or restore its natural action, Dr. Beale would lower its power and destroy the disease and life also. Alas! how often this is done.*)

"The last advice given to the physician, 'not to weaken life,' seems to me to require explanation; for surely, if we could 'weaken the life' of a cancer, it would be just what we desire; and if we could but prevent it from *renewing its life*, we should be doing more than medicine dares at present to hope ever to achieve.

"I have drawn your attention to these points, because it seems to me that the dogmas insisted upon by my friend are opposed to the principles of sound physiology, and to the teachings of the bedside, while they are not supported by any new observations of his own; and because the very positive exposition of his peculiar views in his first lecture seems to me to demand our attention; and I therefore take this opportunity of discussing some of the first principles upon which our science is based.

"I cannot help thinking that Dr. Chambers has assailed some notions which are very much nearer the truth than the substitutes he proposes; and I do not think that the statement that 'disease is a deficiency of action and partial death,' as a general principle, can be received or sustained. It is also incorrect to talk of 'life-giving articles.' Nothing gives life save that which has life; and this is, at any rate, a sound truth, from which all our speculations upon the essential nature of healthy and morbid changes in living structures must start."

How would Dr. Beale's theory of "weakening life," as he terms his practice, apply to the following? The weakening system has been tried upon this case, and here is the result:—

"DEAR SIR,

"I am a working man, with a wife and four children, and for the last twenty months I have been a great sufferer. At the beginning I had an inflammation in my right eye, and that has never been right since. Then I had both my legs inflamed, so that I was obliged to sit with them upon a chair. I have suffered very much from nervous debility, feeling, sometimes as I lay in bed, as if the bed was sinking beneath me—such feelings are not strange to me at the present time. Of late my legs have begun to swell again and inflame, a dimness has begun to affect my other eye, and I feel myself to be little worth. Dear sir, if you can give me any advice that you think likely to benefit me, I will gladly pay you for it; or, if you would prefer a personal examination, I shall be obliged to put myself about in order to pay you a visit for that purpose.

"Hoping to hear from you,

"I am, yours respectfully,

"GEO. BROOKE."

ILLUSTRATIONS OF HOSPITAL PRACTICE, "MEDICAL JOURNAL," FEBRUARY 21, 1863.—CASE UNDER CARE OF DR. JAMES RUSSELL, M.D., BIRMINGHAM GENERAL HOSPITAL.

THIS case is a striking illustration of the inefficiency of Dr. Beale's doctrine of "weakening life" by way of cure. Now, such a case, by our foment packs, &c., would have been cured in a week: we have had hundreds similar, and in such acute attacks have never found the least difficulty in conquering the disease in a very short time, and restoring the patient to health without making the body a depository for drugs, or having irreparably injured the nervous system by torture of blister, &c. It is strange that in all the disputes and disagreements of practice by the legal profession, the greatest depurative agent of the body, the skin, rarely, if ever, comes into discussion, and the importance of stimulating the pores of the skin and the capillary circulation to healthy action is seldom named, and this when two pounds of waste is supposed to pass through these pores in twenty-four hours in an ordinary sized man.

"The next case appears one of typhoid pericarditis, remarkable from its mildness as compared with the attendant symptoms, and more so from the singular persistence and recurrence of symptoms allied to typhoid fever on more than one occasion.

"CASE V.—Ann Tibbetts, aged 37, a nurse in the hospital, had never had rheumatic fever; nor was she aware that she inherited any rheumatic tendency. She had been very assiduous in her attendance upon some cases of typhoid fever, and especially upon one of great severity, which was admitted on January 17th, 1862, and was not convalescent until February 8th. On that day, she was taken with shivering, heat of skin, and great depression, together with soreness of throat, without any morbid appearance presenting itself in the interior of the fauces. On the 10th, a sharp eruption of herpes appeared on her lips. The fever did not subside until the 12th, when she was able to sit up for a short time. From that date until the 19th, she walked about the ward, but was very feeble, occasionally shivered, and complained of severe pain between the shoulders, and of tightness across the chest.

"On February 19th, she was very poorly; had sharp cutting pains across the chest, through each breast, and round the shoulders. In the evening she was seen by Dr. Maxwell, from whose notes I have extracted the preceding report. He found her greatly exhausted, and looking very ill. Careful examinations of the chest did not detect any morbid signs in that region, excepting very rapid and irritable action of the heart. The sounds of the heart were perfectly clear.

"She passed a very restless night, and spoke next morning very urgently of the pain she had suffered in the neck and chest, which, however, was somewhat relieved by the application of warm flannels. At 4, an opiate draught procured ease. At 7, Dr. Maxwell, at his visit, detected the physical signs of pericarditis.

"2 P.M. The pulse and respiration were 124 and 32. There was much moaning; the face was very pinched; aspect exceedingly typhoid; tongue very dry and fissured; skin dry. A fine pericardial friction-sound was heard, chiefly with the *diastole* of the heart. When first heard in the morning, it was double, very loud and coarse, and was distinct over the entire cardiac region.

℞ Æther. chlorici ʒij; tincturæ cardamomi comp. ʒss; aquæ ʒviiiss. M.
Sumat ℥j 4tis horis.

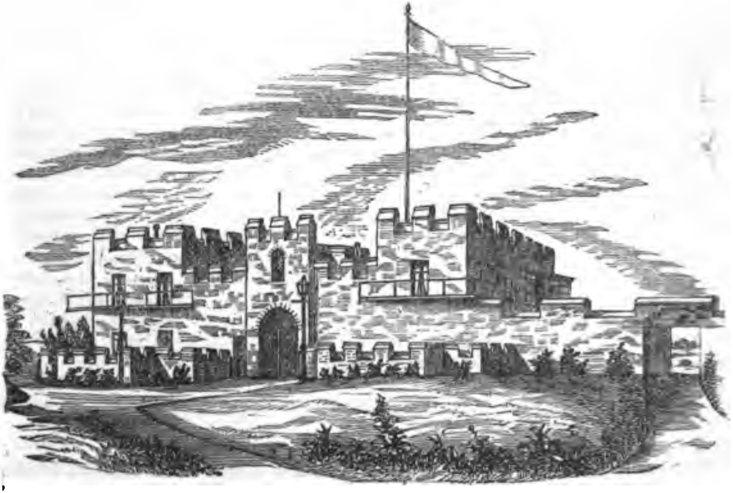
She was ordered to have six ounces of wine.

"During the following two days she remained in much the same state. She lay on her back and was very languid. There was no delirium, excepting some confusion during sleep. Pulse 80, labouring, and presenting an interval after every third beat. She complained of some pain in her left shoulder. Her abdomen was soft, free from distension and from eruption. There was no diarrhœa. The friction-sound continued to be chiefly *diastolic*, and the cardiac dulness was not extended. The pulmonary signs were normal. She had been ordered half an ounce of brandy every second hour.

"On the 23rd, improvement was decidedly visible. The pulse was 60 to 65, frequently intermitted. The friction-sound was harsh and *systolic*. On the 25th, she desired solid food. On the evening of March 8th the patient suffered from an attack of orthopnœa, with much fluttering of the heart; and on the following day a more severe paroxysm occurred, having the characters of angina pectoris. The systolic friction-sound, which was noted on the 4th to be hardly distinguishable, was again very loud. A blister was applied to the cardiac region. The pain and dyspnœa were relieved by two draughts containing opium and chloric ether. She left on March 30th. The friction-sound was then not quite inaudible; but in June, when she returned, the pericardium was quite silent.

"She continued equal to her duties from the last-mentioned date, though they were at times very laborious. Early in August she went for a holiday to Coventry. Whilst there she again became ill and depressed, and suffered from diarrhœa, sickness, and entire loss of appetite. She returned to take to her bed, but was sent out convalescent on September 24th; but four days afterwards was again received, very feeble, with a running, vibrating pulse.

"She came under my care on the 12th of the month, with all the symptoms of typhoid fever. The symptoms were not alarming, though sufficiently severe; obstinate vomiting was very prominent. No eruption appeared, but diarrhœa was present to a moderate degree. She did not leave her bed until the last week in October, a relapse having been occasioned by premature indulgence of her desire for solid food. From that period her recovery progressed satisfactorily; and at the present time she is actively employed in the hospital, in perfectly good health. There were no symptoms of any cardiac affection during the last illness."



RIBER ENTRANCE LODGE.

The principal house intended to be erected here as an addition to the Hydropathic Establishment not yet built. This Lodge is about 620 feet above the river Derwent, and was built and occupied in four months and a half, February to 1st July, 1863.

HOW STRONG MEN ARE FINISHED BY DR. BEALE'S LEGAL PRACTICE OF LOWERING THE VITAL POWERS OF THE ALREADY EXHAUSTED FRAME.

"AMONG the deaths which have occurred within a few months in this city, quite unnecessarily in our judgment, is that of Michael Hoffman, Esq., late deputy collector of the port of New York. He was universally respected and beloved as a useful citizen and an efficient officer. He was blessed with an iron constitution, was in the prime of life, and died in the forty-first year of his age. A friend has sent us the following statement of his case:—

"Being a high liver, he indulged in late suppers, and thus laid the foundation for a plethoric condition and a tendency to apoplexy. He was taken sick August 12, complaining of a severe headache, and remained at home reclining on a lounge during the day. Dr. Otis was called at five p.m. The doctor sent all of the patient's friends out of the room, and, finding that the patient had lost the use of his right hand so that he could not hold a pen, applied twelve leeches, and promoted the flow of blood as long as possible by the application of warm water to the leech-bites. The patient, it should be remarked, had been subject to these headaches for several years.

"The next day Mr. Hoffman kept about the house until eleven p.m., when he retired to bed. Soon after he had an apoplectic fit. Dr. Ranney was called in and took half a pint of blood from the arm, and left him blue pills to be taken from time to time.

"The next day he was worse, and at one p.m. had convulsions. On this day he was attended by four physicians—Drs. Otis and Ranney, and Professors Clark and Barker. In a consultation a suggestion was made that his disease 'might be something different from what they had supposed it to be.'

"The doctors 'saw in his eye the suspicion of the disease,' &c. The urine was then tested (why not at first?), and found to be acid. Bright's disease of the kidneys was then diagnosticated, and the patient was ordered beef-tea and brandy, with injections of spirits of nitre. This plan of treatment was continued four days, when the patient began to sink. He died at three p.m., August 18th.

"In commenting on the medical treatment of Mr. Hoffman, which we think assisted him to die, we have no fault to find with his physicians. They did just what they should have done; just what, as honest and conscientious men, they could not help doing. Their treatment was strictly orthodox, and according to the doctrines of their books and the teachings of their schools. Our quarrel is with the false doctrines which led to the fatal practice.

"Whether the disease proper was technically apoplexy, epilepsy, or Bright's disease, or all, or either, is immaterial, so far as the right or wrong of the treatment is concerned. The patient was in a condition of obstruction and congestion. The bowels were constipated, the blood thick and viscid, the capillaries congested, and the brain overloaded. A physician of the Hygeio-Therapeutic school would have corrected these mal-conditions in this way. He would have relieved the bowels with an enema of tepid water, drawn the blood *from* the head (not *out* of it), by means of the application of cold wet cloths and a warm foot-bath; he would have relieved the congested liver with the wet girdle, and opened the pores by means of tepid ablutions and gentle friction to the whole surface, &c.

"But the doctors leeched out Mr. Hoffman's blood. How could such a process remove the morbid conditions we have indicated? The bleeding process was repeated and the patient further reduced with blue pills until convulsions were induced. Then a council was had, and the whole plan of treatment reversed. It was discovered that the patient had been treated for the wrong disease. The depletion was changed to stimulation. But if bleeding could not remedy obstructions, how was brandy to cure inflammation, or ulceration, or disorganisation of the kidneys? Fortunately for the medical profession, and unfortunately for all the rest of the world, reason and common sense have nothing to do with these matters. Mr. Hoffman was doctored *secundem artem*. He died and was buried and—might have lived if there had not been a single physician on the earth."

ILLUSTRATION OF THE KILLING PRINCIPLES OF PHYSIC,

Bleeding, blisters, setons, &c., which never, under any circumstances, can increase the vital powers of the body; but which inevitably, from the laws of Nature, cause disease and death.—(*From Herald of Health.*)

CASE No. 3.—Wm. L——, from Fowler, N.Y., a man forty years of age, a farmer by occupation, for the past year a soldier, came to the Institute from David's Island Military Hospital, March 7th, 1863. He was a large, robust-looking man when well, and previous to entering the army had enjoyed good health. In March, 1862, after a few weeks of constipation of the bowels, a slight diarrhœa commenced, at first alternating with constipation. In three or four weeks' time it settled into a permanent looseness of the bowels; evacuations occurring from ten to fifteen times in twenty-four hours.

The 1st of June he had typhoid fever, which continued throughout the month. The diarrhœa continued through the fever, and after the fever had left him. He was treated allopathically, going through the whole rounds of stimulation. During the fever his limbs became badly swollen, and a rash appeared over the surface of the body, which the physician called scurvy. When the rash appeared the medicine was changed for acids. The diarrhœa was aggravated by the change, and in three or four days his rash entirely disappeared, but was immediately followed by something worse—paralysis of the lower extremities. There was extreme pain in the muscles of the lower extremities; also in the region of the heart. This continued until September, when the swelling of the extremities returned again. In November he had symptoms of intermittent fever; was dosed freely with quinine and anodynes. This treatment was followed by pain in the back and hips, for which the doctor prescribed a linament, which put him in the most excruciating agony, and for a time he was completely crazy. He was cupped and blistered on the back and over the heart, without any alleviation of symptoms. He finally ceased to take medicines, and slowly improved, till, in January last, he was transferred to David's Island. He remained under the medical charge of the physicians there till the 1st of March, when he received his discharge, after which he came immediately to our Institute. When he entered he was as helpless as a child. He was completely paralysed in the lower extremities, and had not walked a step in two months. His bowels were still irregular, alternating between constipation and diarrhœa. He was troubled very much at times with piles; also, a continuance of the pain in his back and hips. He had to be carried to his room by two strong men—carried to his baths at first—and was waited upon like a child in dressing and undressing. He stayed with us about nine days. His wife being dangerously sick, he was called home to see her. Before he left he could walk all round the room without crutches, and with them he walked to the North River and back, a distanee of over half a mile; and he walked two or three times to Broadway and back. We gave him for treatment, while here, a vapour-bath ten minutes every day, followed by a spray at 85°; the wet sheet-pack for forty minutes, followed by the half-bath at 90°; and, at four o'clock in the afternoon, the hip-bath at 85° for fifteen minutes. He wore the wet girdle at night about the body above the hips. He ate two meals a day, almost entirely of fruit and vegetables. His general health was very much improved; his bowels became regular; his appetite good and he gained in strength very rapidly.

MATLOCK HIGH TOR.

HANDBOOK OF HYDROPATHY.

DIVISION I.

THE HUMAN BODY; ITS STRUCTURE AND FUNCTIONS.

The limited space I shall take in this book will not allow me to quote the standard works on physiology to the extent I wish. I shall, however, endeavour to give ordinary inquirers a pretty general idea of the subject of which I treat, and add a list of works for those who wish to enter more minutely into the study of these matters.

Having no professional character at stake, as I have not "qualified" at Surgeons' or Apothecaries' Hall, I can make use of terms that otherwise would expose me to ridicule. There is in this an advantage to my readers, unlearned in the scientific language of the medical schools, as it enables me to speak in terms they will understand.

We read in God's book, the Bible, that man's body was made out of the dust of the ground, and we find in this earthy compound from six to seven-tenths of gas and water, the remainder silica or flint and salts; so that in the course of a few years after the death of the body, there is nothing left but a small quantity of dust. "Then shall the dust return to the earth as it was; and the spirit shall return unto God who gave it." The gas and water having risen into the atmosphere come down in rain and moisture, and being absorbed by vegetation again enter into the composition of human bodies, through the vegetable products of the earth. The very bodies we now occupy may, and most certainly do, contain some portion of the very materials that have formerly constituted other human bodies, as nothing here can be annihilated until the final destruction of all things in and on the earth. (See cut, page 262.)

The spirit or immortal life, however, was, we read, breathed into man's nostrils by the Almighty Creator, "*and man became a living soul,*" to live in, and out of the body for ever. We have here commenced an existence which is but the dim shadowing of the glorious state that is to follow, when this earthly tenement of the spirit is changed for one "incorruptible, undefiled, and that fadeth not away." This soul, or spirit, which dwells in and actuates our earthly frame, performs its movements by the nervous system, which may be aptly termed an electric telegraph apparatus.

The nerves of the special senses, viz. touch, taste, smell, vision, and hearing; the nerves of swallowing and breathing; with the nerves of motion and sensation, are the three highest orders of the nerves, and are called the spinal cerebral. The fourth order consists of the nerves of the organic or nutritive system.

In the spinal marrow the nerves of motion and sensation take their rise, and run together to every part of the frame where motion and sensation exist. A motive nerve will not act, unless accompanied by a nerve of sensation, which performs the office of stimulating that nerve, or conveying its message for action. A continuation of the spinal marrow, just within the skull, is called the *medulla oblongata,* from which, and a little farther in the base of the brain, the nerves of the special senses of sight, smell, taste, swallowing, breathing, and hearing, have their origin; these nerves, or telegraph wires, proceed to the organs to which they are made to give action. All the nerves of motion, sensation, and special sense are connected with, and ramify into the *cerebrum,* or upper part of the skull; this is the supposed battery where the nervous energy, or electricity, is concentrated for the mind to apply or use as it is wanted: just in the same manner as the battery is kept charged for use at the electric telegraph station.

The *cerebellum* at the back of the skull is considered to be more especially the battery for some of the nerves of special sense. These three orders of nerves of motion, sensation, and special sense are called the true spinal *cerebral* system. They are of the highest order; and their office is entirely confined to the operation of the mind over the body, except in involuntary acts. Just as these nerves, or telegraph wires, are kept in a healthy state depends the power of the soul to give expression to its will. Precisely as the cerebral nerves of an infant on its entry into the world are developed, so is the power of the soul within to give expression to the will. If, on the contrary, the cerebral nerves be defective, the infant grows up with what is called a weak intellect, or idiotic. But those terms are erroneous, as concerning the power of the spirit; it is not the immaterial spirit that is deficient, but simply the material of the telegraphic battery or its wires. The soul can never know any growth or diminution, naturally speaking, in its powers; it becomes conscious of new scenes and new ideas; but the powers to receive those ideas are only limited in this state of existence by the perfectness, or otherwise, of the nerves, the medium of communication with external objects. The soul is a divine emanation, and possesses powers only in a much lower degree to those of its Divine Creator. The deep significance of the expressions of the Bible—"And God said, Let us make man in our image,"—"So God created man in his *own* image,"—"And breathed into his nostrils the breath of life," are little thought of or rightly appreciated. With this breath God has deputed wonderful powers to his creatures. How wonderfully man is endowed with the power of putting motion into inanimate matter—into steam engines, for instance, and the great variety of machinery! Then how extensive and illimitable is the range of man's mind, and how far it can soar out of its body, beyond the limits of this globe on which we dwell! It can pursue its course into regions which have not yet been seen, but which it is often compassing in the spirit of thought. When the cerebral nerves are come to maturity in the full-grown person, then we see the soul acting with the full powers which this state of existence permits. The sole difference we see in the mental powers of individuals is owing to the difference and unequal development in the cerebral nerves alone. Thus we find persons, and even families, having a fine development of the head generally possessing great superiority in mental powers. On the contrary, we shall find those individuals with the low, small retreating forehead to be as much deficient in their mental powers; nor will any amount of labour bestowed upon their mental culture ever succeed in extending or enlarging those powers in any great degree. Again, we shall see some individuals with a large development of the upper part of the forehead and skull, who are by no means clever, yea, sometimes sadly deficient in intellect. These exceptions proceed from some defect in the nervous centres of the base of the brain, which, from the preponderating power given by the large development to the battery of that telegraph of the human frame, causes such individuals to act on impulse without judgment. On the other hand, we shall find others with the small, narrow, low forehead, often evincing great acuteness in business, and sometimes not wanting even good ideas. Here the centres in the base of the brain are well developed; but, for want of a proportionate battery in the cerebrum of such persons to give healthy, sound impulse, they are generally slow to act, and deficient in energy to put their designs into execution.

As old age comes on, the cerebral nerves, with all the organs, begin to lose their power; and we see the soul, which acted with so much power when the frame was in full vigour, again return to the feeble mental efforts of childhood, simply from decay of the matter of the nerves. I shall notice, in connexion with the next and fourth division of nerves, the injury done to children by too early education, and the over-working of the brain by studious or over-anxious men of business.

I wish, however, not to be misunderstood in these statements with respect to the powers of the soul as being limited by the perfect or imperfect structure of the nervous system in the brain. The Almighty and Beneficent Creator evidently has not made man's happiness, in this or a future state, to depend on the conformation of brain inherited from his progenitors. Such an idea of the Great Creator's Omnipotence would ill accord with the Christian's idea of his infinite goodness. That the power to acquire knowledge, and to act with vigour, sound judgment, and great foresight, is alone possessed by those who have a harmonious and fully developed brain, is past all controversial doubt; and so is also the fact, that the highest degrees of temporal and spiritual happiness are by no means unfrequently found to be possessed by those who have little capabilities for great acquirements in the knowledge of this world. God, we often see, takes the weak things of the world to confound the wisdom of the wise, simply because many persons by the world considered weak, and of little account as to knowledge, have applied for and received the teaching of the Holy Spirit, making them wise unto salvation, and giving them the peace which passeth all understanding. And although they are conscious they do not possess high powers of making great progress of investigation in secular learning and scientific pursuits, yet they are perfectly content and happy, knowing that God appoints some, by the gift of great talents, to fill certain positions in life, while He makes others conscious that their want of these high intellectual powers is no detriment to their happiness; and that soon all who have greater or less talents must give an account of the use made of those talents to a Master who will reward His faithful servants, though ungifted and humble, with a crown of life which shall never fade away. And so our Almighty Creator shows to His creatures that, in all His dispensations, their consummate happiness is His design and intention. For to all "the Spirit and the bride say, Come. And let him that heareth say, Come. And let him that is athirst come. And whosoever will, let him take the water of life freely,"* that when their task on earth is accomplished, they may realize the apostle Paul's beautiful exposition of the nature of the body and spirit—"So also is the resurrection of the dead. It is sown in corruption; it is raised in incorruption: it is sown in dishonour; it is raised in glory: it is sown in weakness; it is raised in power: it is sown a natural body; it is raised a spiritual body. There is a natural body, and there is a spiritual body. As is the earthy, such are they also that are earthy; and as is the heavenly, such are they also that are heavenly. And as we have borne the image of the earthy, we shall also bear the image of the heavenly."*

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* Rev. xxii. 17.

Next, as to the structure of the spinal cerebral nerves. It will be seen by Sir Charles Bell's Work on the Nervous System, and like wise by Kirke and White, Marshall Hall, and others, that these telegraph wires are tubes, supposed to be filled with a fluid. When this fluid or its delicate tube or outer sheathing becomes vitiated or injured by vicious living, improper diet, private excesses, but most of all by the use of intoxicating drink, tobacco, opium, &c., the mind, desiring to act, in attempting to send its messages by those damaged nerves or telegraph wires, finds no response. A person with sound healthy nerves determines on an action and performs it with ease and decision, and afterwards the nerves remain at rest until again prompted to action by the force of the will, but not so with the poor nervous hypochondriac: the wires repeat again and again the same impressions first made on the nervous centres in the brain, the soul has lost control over the frame, the soul in fact has got a trembling disordered harpsichord, unstrung, and out of tune, and is sometimes so harassed and distressed with unavailing efforts to make it answer to the efforts of the will, that, in despair, it sometimes dashes the whole frame to pieces by a violent death. Without a good knowledge of the nervous system, its structure, functions, and action, no person is justified in undertaking the cure of disease; and it is of the utmost importance to every person to understand, at least, the outlines of his own system, to be enabled to make the utmost use of his intellectual powers, and to enjoy existence with the high privileges and endowments God has given to man, by bringing the body in subjection to the soul, and thus fulfilling the high purpose of his creation, in glorifying the Gracious and Almighty Author of his being. The nerves proceed from their centres in the spinal marrow and the brain, in bundles, enclosed in sheaths; and they strike out of the sheaths to their different destinations, as they come near parts to which they are designed to give life and action. Their numbers are incalculable; as every peripheral point of the frame has its direct and separate set leading to the nervous centres in the brain. They are larger at their origin, and become so fine as they enter the ultimate tissues of the body, that their termination cannot be discovered even with a microscope. There is a beautiful transparent film called the arachnoid membrane, which encloses the spinal marrow, and is continuous over the whole mass of brain; it also lines the sheaths which enclose the nerves, so that the brain, spinal marrow, and nerves are enclosed in one continuous net-work, in the same manner as the mucous membrane lines the mouth, stomach, &c. This membrane is wonderfully fine, and is moistened with serum, and therefore called one of the serous membranes of the body, in contra-distinction to the mucous membranes lining the mouth, stomach, &c. When the blood is too poor by being vitiated with stimulating drinks, the use of tobacco, severe cold, want of good food, or other causes, the serous membrane is short of this lubricating moisture, or serum, and, consequently, the nerves move in dry sheaths. This soon tells upon the limbs in motion, and is one of the principal causes of rheumatic pains. The more exercise a rheumatic subject takes, the more pain he suffers. I know cases in which persons, having been advised to walk their rheumatism off, have brought on such chronic inflammation in these sheaths, and in the sheaths of the muscles, as to utterly destroy their vitality, and render them hopelessly crippled. Entire rest, proper diet, with our natural means of restoring the nutritive powers to action, are the remedies we use in restoration. Blistering and heating lotion applications, by weakening the parts, invariably injure instead of benefiting. Any mode of living which prevents the blood affording a due supply of serum to these sheaths, affects the brain and spinal marrow, as well as the nerves, and is often a cause of loss of power in the brain and spine, and induces paralysis. Irreparable injury is done to both the brain and spinal marrow by this principle not being recognised in the barbarous treatment of spinal complaints by issues, cupping, scarifying, powerful ointments and lotions, which never did nor ever can do anything but ultimate injury.

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* 1 Cor. xv. 42—44, 48, 49.

It is easy to discover when the brain is affected, by a sense of fulness in the head or other uncomfortable symptoms. And immediately it is pronounced congestion of the brain; leeches, blisters, and aperient medicines are prescribed; further weakening and irritating the already distressed nerves; frequently to the ruin of the poor patient.

The idea, that when the head is suffering from a sense of fulness, or irritability, it is only necessary to take some of the fluid out by bleeding, cupping, or blistering, is a mischievous, ignorant, and often fatal error, and often lays the foundation of suffering and incapacity for the rest of life. The originating cause of cerebral irritation will, in almost every instance, be found in the stomach, or some other internal part of the body. I have had severe cases of congestion of the brain, with almost entire unconsciousness; and cases of ordinary determination of blood to the head; and even of apoplexy, with loss of memory, which have been restored simply by derivative treatment of fomentation, sitting baths, mustard foot baths, wet sheet envelope, &c. It is to be hoped that the injurious and unnatural system of bleeding, blistering, and purgative practices will be entirely abandoned for these more rational modes of cure derived from natural principles. In the hundreds of cases, comprising every disease and ailment to which the body is liable, that have come under my care, (many of which had been given up as desperate before coming to my establishment, or free hospitals,) I have never had recourse to bleeding, blisters, or purgatives; and only one person, out of the many hundreds I have had, has died in the establishment, 1858; his death was the result of his own act in taking stimulants unknown to me, and against my most urgent advice. The principle I act upon in the treatment of disease, is to endeavour to get the nutritive powers into healthy action, and thereby replace inert, morbid, diseased, or inflammatory matter in the system by healthy substance, which alone can throw off disease. As it is manifestly impossible to purify vitiated tissue, it must be thrown off and replaced by new, before the body can be at rest.

From this slight sketch of the cerebral spinal nerves, it will be seen what a wonderfully constructed system we possess; and when it is noticed that every voluntary act must first originate in the brain, and that the message has to travel over a considerable extent of the telegraph wire, or nerve, before the act is performed, (for the act appears simultaneous with the will,) the speed at which the message must travel passes all calculation. One more observation on these motion nerves before I proceed to the fourth order of organic or nerves of nutrition. From want of a due appreciation of the action and nature of these nerves, and their arachnoid covering or sheaths, great and irreparable injuries are often done to the frame by practitioners of allopathy, and by the merely *cold* water doctors. From the previous observations it will be seen how delicate and sensitive the cerebral spinal nerves are; and no severe shocks can be given to them without risk of permanent injury, or death itself. I am aware, in condemning plunge baths or sea bathing, I am running counter to popular opinion; but faithfulness in the cause of truth is a greater consideration with me than having my statements ridiculed. No one ever uses a plunge bath, or the sea bath, without risk; ninety-nine may escape injury, but the next may be ruined for life. The sudden shock to the nerves, and also driving the blood from the surface of the body on the internal vessels, where there may not be power to bear the shock, or return the blood, if not the cause of immediate injuries, lays the foundation of disease which is often developed a considerable time after. I named this to a London surgeon, who favoured me with a visit to inspect my establishment. He corroborated my opinion at once, and said at that time he had an eminent solicitor under his care, who, in going last autumn to the seaside for rest, plunged into the sea as usual with visitors; which caused congestion of the brain, and a severe and dangerous illness, from which he is now a good deal recovered; but the effect will be felt for the remainder of life. In the case also of a lady I have had in my establishment, who went well, and in health, into the sea, the shock produced congestion in the lungs and chest. For this, leeches and blisters were applied by her doctor, which, of course, still further lowered the vital powers of reaction, and the result was chronic asthma, of a most distressing kind, from which the lady is now a complete invalid, and a great sufferer, without hope of cure. In the case of another lady, who, in hot weather, went into a cold plunge bath, during a visit to a friend, internal congestion was the result; and an abscess formed which destroyed her.*

Errors are also of frequent occurrence by the reflex action of the nerves not being understood. A lady has recently been at my establishment, who went under a celebrated professor of physic in Edinburgh, for pain in the lower part of the spine; this, he told her, was merely rheumatism, and would soon be cured; he ordered rather severe application to the part, and in a fortnight the lady was laid prostrate in bed. The cause of the pain was irregularity in an internal part, which is supplied with nerves from that part of the spinal marrow. The severe applications to the poor suffering nerves of the spine only aggravated the internal disorder. She was greatly restored by a long course of mild hydropathic treatment, but I fear will sometimes during life feel the effects of the barbarous "professional" treatment of the learned professor. I have had not a few cases of what of what have been termed spinal disease in females, and for which blisters and setons have been applied to the spine, to the invariable injury of the patient, the cause of which I have always found to be internal irregularity. In some cases, the use of the legs has been almost lost, as if by paralysis, but has been, to a great extent, restored by our natural means of cure. I could give many cases of the same nature, for they are, I regret to say, of frequent occurrence in our experience. The injury done, especially to females, by bleeding, blistering, injections, caustic, and the use of certain instruments, ruins many a good constitution, and renders the patient an invalid for life. (See Mrs. Smedley's Manual.)

Sir Charles Bell and Dr. Marshall Hall, in their celebrated works, and other writers upon the subject, show that pains in one part of the body may have their origin in remote parts: diseased parts communicating pain by the sympathetic nervous telegraph wires to different parts of the frame. Nothing but a restoration of the nutritive powers can succeed in giving relief in such cases.

Adhesion of the arachnoid membrane to the substance it covers in the brain, spinal marrow, and nerves, is a consequence of inflammatory action, and is often a mysterious cause of suffering, which it is impossible correctly to ascertain during life, through the reflex action of the nervous system causing extraordinary pains in parts of the body remote from the point of disease. The late Dr. Logan, of Leeds, suffered excruciating pains many years, especially in the legs, which he had laid on cushions before him, covered with basket-work, lest anything should accidentally brush over them; so acute was the sensibility. Examination after death showed thickening and adhesion of the arachnoid membrane covering the spinal marrow.

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* **Mrs. Smedley has for some years had the sole charge of the female patients.**

It is one thing to have a scientific knowledge of the frame, and quite another to have a good knowledge how to cure disease. No one can safely be trusted with a ship who has not a scientific knowledge of the laws of navigation. However creditably a man may have passed his examination for a commander, it by no means follows he is able to navigate a ship unless he has had a practical education on board, both in sunshine and in storm. And so it is with the medical profession. A good curative knowledge can only be obtained by practice, after an educational course. This is very strikingly the case with many of the first and most scientific writers and lecturers on the human frame. Their time has been spent in the study of the frame, in all its wondrous complexity; and they have had little opportunities for personal experience in comparison with those who are engaged in practice alone; and, consequently, are sadly at fault, when they prescribe remedies which, from their knowledge of the functions and structure of the body, *ought* to succeed, but, nevertheless, are of no avail, and often only aggravate disease. A striking instance, amongst many I have had, has just come under my notice.—A solicitor in the north of England writes to me as follows:—

Matlock Bank, June 17th, 1857. DEAR SIR,—I have great pleasure in writing you an account of my illness, and the remedies I have tried in mitigation of it. I was first struck with paralysis in 1851. Within two or three hours of my first attack, I sent for my usual medical attendant. He shortly called upon me in company with Dr. ——, his subsequent partner. Dr. —— at that time bled me, and subsequently administered a cup to my neck, and afterwards applied a seton to the same. In about two months time I went on a visit to a brother-in-law of mine, a medical man in ———; with him I stayed a month or six weeks; and during that visit I twice went to town in my said brother-in-law's company to consult the celebrated Dr. ——, a physician, said to be great in paralytic cases; he only advised me to take a quantity of blue bill, get a pony to ride on, and to take an enema once every morning. The blue pill soon lowered the system, and made riding unsafe, the enema brought only temporary relief. In 1853, I was again struck whilst attending at the assizes. I then got the assistance of a friend of mine in the neighbourhood for that night, and on my return home I got the assistance of a fresh surgeon, who attended me ever since, till my coming here. He had the assistance of Dr. ——, a gentleman well known in ———, who, among other things, advised me *not* to give up my snuff, (four to five ounces per week,) as that, he said, had killed a Mr. ——, a brother professional of mine. I remain, dear Sir, yours truly,

J. Smedley, Esq. P. T.

The physician referred to is one of the most celebrated discoverers of the nature, action, and reflex action of the nerves; and perhaps no man living is more thoroughly acquainted with the subject. How strange he could prescribe no more effectual remedies! He made little inquiry into the patient's habits; did not prohibit his taking snuff, a habit alone sufficient to induce paralysis; allowed stimulants; and failed in giving the least relief! Another physician advised the continuance of the use of snuff, four or five ounces per week!! The patient came in a deplorable state, unable to retain his urine, with his bowels constipated, and was deaf; all the result of the failure of nervous power, aggravated by the pernicious prescriptions of his doctors. He is now decidedly improving in every respect. All blistering, bleeding, setons, and purgatives tend not to strengthen and restore, but to weaken and irritate. The father of a boy afflicted with curvature and disease of the spine, with loss of the use of both legs, applied to me for advice. He stated his son had been under the care of several medical men, and in an infirmary, where issues were put in the poor creature's back; his sufferings became so intense, the father removed him. From the first there could be no hope of restoration; and all the unnatural torture of the nerves only aggravated the misery of the poor lad. How issues inserted along the spinal column, with all its delicate membranes and network of nerves, were to restore and give nutrition to the part is past comprehension: but, in such way, thousands are ruined for life, or destroyed.

Case No. 17.—PARALYSIS.—The following case consulted me, and I gave him the prescription following the note:—"It is thirteen weeks since (*very unlooked-for on my part, as I am a thin, spare man*) I was seized with paralysis, from my hips downward; I could not pass urine; was obliged to send for a doctor, and had to use an instrument for six weeks. I do now without the instrument, but have no command over my urine; the lower part of my bowels are also affected, so that I am obliged to take strong purgatives to get action of the bowels. At the first both my legs were without motion (*never without sensation*); now my right-side leg is useless, except a little from the hip, but on my left leg I can bear a little weight, and can move any part of it at will, although it is very much benumbed, and always feels—as is the case with my back—a sensation as if cold water was being poured on them. I am as well otherwise as I have been for years; I think I eat with a better appetite than I did before I was seized. I have for many years been at out-door work." *Home Treatment.*—9, 7, 115, 115½, 115¾, 112, 113, 114, 120, 121, 18, 19, 157, 137, 123, 16½, 116, 83, 86.

THE FOURTH ORDER OF NERVES, commonly termed the nerves of organic life, or nutrition, or ganglionic system. These nerves, by their vis vitæ, or power of life, have entire control over the organs of circulation, nutrition, secretion, absorption, and excretion. They have the same structure as the spinal cerebral nerves, tubular, and filled with fluid; encased in sheaths, and act by their electric powers; and so identical is this property, that the power of one order is lent to or sympathises with the other in cases of emergency. As for instance, when the brain is pressed by mental exercise, the vital power of these nutritive nerves is also called into the assistance of the cerebral system; and if the mental effort be long continued, the proper function of the nutritive nerves is partially suspended, causing what is commonly called indigestion and biliousness, from the liver not acting, and so lowering the power of all the organs of nutrition and circulation. On the contrary, when the mind is not properly exercised, the vital power of the cerebral system is left to add its influence to the nerves of nutrition, and thus often produces a state of obesity, or fatness, with a tendency to apoplexy.

When food is taken into the stomach, it is there dissolved by the action of the gastric juice; but unless the vital power of the large plexus of organic or nutritive nerves in connexion with the stomach be sufficiently strong, the chemical change in the chyme or fluid does not take place; the consequence of which is acidity, followed by fermentation, causing great irritation in the stomach, duodenum, and bowels. The unhealthy matter passes into the bowels, where it is taken up by the absorbents into the blood, and so passes into the tissues of the body, building it up with inert or effete matter, which the body then tries to throw off. If there is power to accomplish this, by boils, rash, shingles, diarrhœa, or other means, the vital organs are kept from injury; but if the vital power is low, the organs cannot resist the surcharge of morbid matter, and the result is inflammation, fever, &c., which often leads to fatal results. How often is premature dissolution the effect of injury done to this beautiful structure, by the spirit of man becoming a prey to the appetites and passions! How often is he suddenly cut off when the brain is surcharged with alcohol, in a fit of drunkenness! or he dies the awful death of a raving madman in a fit of delirium tremens, the effect of the same baneful cause!

A good knowledge of the nature and action of these organic nerves, as well as of the spinal cerebral system, is absolutely necessary to enable the soul to carry out the work it has to perform with comfort and ease. The electricity in these nutritive nerves is the cause of the circulation of the blood; also the absorption by the liver of those materials out of the blood which go to the manufacture of bile or gall. It gives power to the liver to manufacture saccharine and other matters to enrich the blood, the quantity of which materials are materially altered by injuries or other causes affecting some parts of the brain, and undoubtedly often results from that organ being affected by the habits of taking intoxicating drinks to excess. It also assists in forming the red corpuscles which impart that colour to the blood, and gives power to the uriniferous tubes in the kidneys to draw out the urine, with other impurities, from the blood. It gives power to the flesh, bone, &c., to assimilate their materials out of the blood, as the blood circulates through the body. The electricity or vital power of these nerves, commonly called ganglionic or organic, is, in fact, *the life of the body;* and just as this power is in vigour, or otherwise, so is the healthy action of the system. As electricity is the motive power of the will, and is generated in the brain; so the same element exists in these nutritive nerves for the purposes above named. This electrical power, however, is more generally generated in the body, as demonstrated by works on animal magnetism, which show that in the fibrous tissues of the body molecules of magnetic principle exist. An extensive knowledge of this principle in the human body is essential and invaluable in the study of health and disease, as it is in fact the key to the principle by which the bodily powers are to be renovated or kept in health; and it is the only true principle on which to act. All attempts at curing local disease, or preserving health, without taking this principle as a basis, only leads to chance and temporary success, and ignorance of it often to the undermining of the constitution, by attempts to expel maladies by local applications internally or externally. The first point to notice is, how this vis vitæ, or power of life, in the organic or nutritive nerves, is to be kept up to its proper force. This is only to be accomplished by strict obedience to the natural laws framed by the Creator as conditions of health. The high privilege of freewill enjoyed by man above all others of God's creatures is, when under the influence of religion, a source of supreme happiness to him; but by his perversion of this high privilege, in the indulgence of his carnal appetites and passions, he renders that precious gift of his Creator a source of misery and suffering in this world, and eventually of his eternal ruin. When man brings his body into subjection, and is guided in his actions by the all-wise, immutable, beneficent laws laid down in God's word for his happiness, he takes food and drink only for the purpose of enabling him to perform the mission God has appointed him, and brings his body, with its animal desires, into subjection. Just as man governs himself by these laws, so we see him reach the high standard in the position God at first intended him to fill; but, on the contrary, when the soul gives way to the promptings of the appetites and passions, so we see a whole flood of disease and misery let loose on the poor creature which often debases him below the brutes themselves. Comparatively few strike out a course from their own convictions. The customs of society, fear of ridicule, or being thought singular, carry multitudes down the stream against their better judgment; and for which they have to pay by future suffering with those following these customs. Companionship, however, in suffering of this kind, I cannot conceive, affords any consolation. (See page 234.)

The habits of life and course of diet followed by society generally are, in many points, diametrically opposed to the laws of health. Breakfast, with toast and butter, strong stimulating coffee, strong tea, especially green, which is well known to be coloured with a highly deleterious ingredient; white bread, when had from the baker's, often contains alum or other pernicious ingredients (which they say they are compelled to put in, to please the public, who will have a white light loaf); with other aliments, such as broiled bacon, salt fish, ham, with mustard and pepper; and not unfrequently have I seen, at commercial hotels, the addition of bitter ale. Then, some take luncheon, or rather a first dinner of animal food, &c., in two or three hours, with wine, ale, or porter; and later in the day, a second and principal dinner, sometimes like the one I describe further on. Others take dinner at one or two o'clock, composed of soup, animal food, with condiments, (without which the indulged palate cannot relish plain food,) pastry, sweets, followed by cheese and uncooked vegetables, in the form of celery and salads, with ale, porter, and wine, and in many cases concluding with a cigar, or pipe of tobacco, and spirits; then at five or six o'clock, tea, with toast and buttered cakes, &c. Animal food and tart again for supper at nine o'clock;

with ale or spirits, cigar, or pipe, by way of finish to the day's work of eating *not to live, but living to eat.* When we compare the nature of the food thus taken with that best adapted to make sound muscle, &c., and to keep up the vis vitæ, or electric power of life; it is no wonder we see the multitude of maladies so general among mankind, debasing the tissues, and affecting the brain.

THE STOMACH, LIVER, BOWELS, &c.

The organic, or nutritive nerves are spread throughout the body, but have no common centre, as the cerebral spinal nerves have. The principal plexus, or mass of these nerves, is at the stomach, because there the first operation on the dissolved food, or chyme, as it is called, is to be performed: that is, the chemical change is there to be first communicated through the organic nerves.* When there is good healthy power in these nerves, the change is perfectly made. The matter passes through the pyloric orifice into the duodenum, a Latin term, signifying twelve; from which word this first bowel, or second stomach, derives its name, being supposed to be generally twelve inches long. Here another important addition is made by the bile conveyed into the duodenum by the gall-duct from the gall-bladder, and also by the addition of the pancreatic fluid brought from the pancreas, or sweetbread, by another duct. The alimentary matter then passes into the small gut, which is supposed, on an average, to be about twenty-eight feet in length; and on its passage through, as will be explained, the principal part of the nutriment is taken up and conveyed into the circulation for the support of the body. The insoluble part, with the fecal secretion drawn out of the blood into the colon, forming what is commonly called the stool or excrement, passes through this colon, or large gut, and is discharged at the anus.† The colon, as will be seen by the engraving, rises on the right side, near the groin, where the celiac valve is situated, ascends upward toward the liver, across the top of the bowels, and then descends down the left side, turning and lying on the spine in the lower part of the back, passing downwards to the anus or seat.

The twenty-eight feet of small gut is attached to a fatty membrane, called the mesentery. Under this mass of fat running upwards along the spine, is a main tube, or as it is termed, the thoracic duct, because it rises up to near the throat, on the left side. From the lower part of this tube, or thoracic duct, there are vast numbers of smaller ones which pass into the bowels protected by the mesentery. These, called lacteals, or absorbents, project a short distance into the bowel,‡ where they come in contact with the digested food passing through it, and from whence, by their electric power, they absorb the juice out, and convey it to the thoracic duct, by which it ascends to the front of the left breast, near the top of the shoulder; and there it enters what is called the left subclavian artery. This subclavian artery contains exhausted blood brought round to be renewed. The contents of the thoracic duct are here mixed with this exhausted blood, which then passes downward into the right valve of the heart. This valve opens to receive it, and then, by its muscular power of contraction, forces it into the lungs, where the fluid, which is then of a dusky colour, comes in contact with the air, and imbibes oxygen, which changes it to scarlet, and thus enriched and renewed, it is now fit, as fresh material, for absorption into muscle, bone, &c. The renewed blood now passes into the left side of the heart, and from there it is pumped into the large tubes called arteries. Vast numbers of very minute vessels or tubes, called capillaries, proceed into the flesh* from the arteries, and round the bones, and to every part of the frame; where coming in contact, each part, by its vis vitæ, or electrical property, has the power to take out of the blood the material fitted for its peculiar support and structure.

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* See cut, page 384. † Cuts, pp. 329, 336. ‡ Page 329.

The absorbents before named take up from the bowels, into the thoracic duct out of the digested food, any juices, without choice or selection; these juices have then to be purified, principally by passing through the lungs, liver, kidneys, and a number of other glands.

The blood enters the substance of the kidney by arteries, from which, as will be seen in the engraving, small sprig-like branches arise, terminating in a knot of veins called malpighian tubes.† A uriniferous tube covers this, and, by its electric power, draws out of the blood, through these knots of vein, the urine, together with phosphate, urea, and other matters not required for nutrition When these knots of delicate structure become inflamed or diseased, by alcoholic drinks, or other bad matter in the blood, they allow the rich and nutritive parts of the blood to pass with the urine; and soon, as in diabetes, rapid waste of the body takes place.

The liver takes out of the blood by its electrical power, or vis vitæ, the proper material to manufacture into gall; which, when made, is deposited in the gall-bladder, situated between the lobes of the liver, and by the pressure exercised by those lobes upon the gall-bladder, the gall is forced into the duodenum, and is the natural stimulant or purgative acting upon the bowels.‡ If the electrical power of the nutritive nerves is weakened by alcoholic drinks, and the use of tobacco especially (a slow but sure poison,) or by improper food, the bile or gall is not taken out of the blood; it continues to circulate through the body, carrying mischief wherever it comes in contact with these delicate nerves; and if relief is not given, produces jaundice, and what are termed bilious complaints. When the gall is of a bad quality, irritation of the mucous membrane and nerves of the duodenum is caused, and instead of the bile passing as it ought to do into the bowels, it finds its way upwards into the stomach, and is thrown off by vomiting, or passes downwards, irritating the bowels, and causing diarrhœa, and this is the way many have to pay for the pleasures of the pipe and indulgence at table.

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* Muscle is the proper term. † See page 360. ‡ See page 324.

The liver acts also as a nutritive organ, forming sugar out of the exhausted blood, and carrying it into the circulation; and also in forming the red corpuscles which must be present in healthy blood, which is of a light crimson colour. A large amount of impurity in the blood is thrown off by the lungs, which also absorb oxygen; this, coming in contact with the carbon in the blood, produces combustion of that substance, and so gets rid of impurity. When a person has fetid breath, the blood is in a bad state, and this should always give the alarm to rectify the impurity by proper diet, attention to the skin, &c., before the disease increases, and typhus fever or inflammation result.

On an average one hogshead of blood passes through the heart and lungs every hour, and calculation shows that entire circulation of the quantity contained in the body takes place in from one to two minutes. A power equal to four cwt. is exercised by the lungs in drawing in the air into the bronchial tubes and air cells, and of three cwt. in expelling the air out of the lungs. It is supposed the linings of the bronchial tubes and air cells around which the blood circulates to come in contact with the air in the tubes and cells, pass a surface or area exceeding thirty thousand square inches. Besides the liver, lungs, and kidneys, other organs act as purifiers to the body. The skin, with its three thousand pores to every square inch, throws off from an average-sized person two to three pounds of impure matter every twenty-four hours by insensible perspiration There are, it is supposed, on an average, twenty-eight miles of these minute corkscrew-like ducts or conduits to let out the perspiration. Then there are as many pores called absorbents, to the minute capillaries, or small blood veins, to give them oxygen, and to cause combustion of innutritious matter. Hence the necessity of breathing pure air, and keeping the skin cleansed of dirt and excretions, which otherwise would be re-absorbed; and also, the necessity of having under garments frequently washed, or they will become charged with this fetid matter, and will restore it back to the system by the absorbents.

The extensive system of lymphatic veins and glands distributed throughout the body absorbs matter, purifies it, and returns the nutritive part into the system, and the rest into some of the channels which carry useless residue away. The glands perform a very important office, and act extensively as chemical laboratories in preparing nutritive matter for assimilation; beyond the fact that they have this power, little is known of their complicated and delicate structure. The wonderful organism of the human frame, taken in all its parts and workings, is altogether past comprehension. It would make this description too complicated to go into all the minute particulars of the structure and working of the various parts of the frame. I give farther on many engravings and notes, and at page 2 of this work a list of books which enter into these particulars.

HIGH TOR TUNNEL, MATLOCK.

DIVISION II.

DIET, CLOTHING, AND HABITS OF LIFE.

Without a firm resolve to conform to the laws of nature in respect to diet, &c., no curative treatment will avail for health or comfort. Thousands, indeed by far the majority, both eat and drink what they are fully aware is not best for their healthy sustenance; and yet persist in such a course, merely to gratify their appetites; thereby bringing upon themselves much suffering, and shortening their lives. Some act thus from a natural taste for such things, and others from a dislike of being thought peculiar in their habits of life. Such are generally complaining of being unwell, and truly they may; and are constantly applying to the doctor for advice and physic, who can do nothing for them but give temporary relief by pills and draughts. The temperate use of plain and wholesome food, cleanliness, and taking proper open air exercise, with that proper denial in abstaining from intoxicating drink, smoking, and other pernicious habits, and a strict government of the passions, will bring a certain profitable reward. I have not the slightest expectation of making all converts to simple living who read this book; but as my former pamphlet induced many to change their mode of living for the benefit of their health, I have no doubt this more extensive treatise, in which the hydropathic system is more fully explained, will have a similar effect in many cases. I have recently had two army officers in my establishment, who were restored to comparatively good health during a short stay. They owned the benefit they received from our simple mode of living, and abstinence from stimulating drinks and tobacco; yet they declared it was impossible to avoid taking wine, spirits, &c., at the mess table, and at the dinner parties they were obliged to attend, thus sacrificing health to foolish custom. A recurrence to late dinners, and the usual quantity of wine they had been in the habit of taking, with cigars, will certainly bring a return of the ailments for which they came to my establishment for relief, and prevent them enjoying that good health and calm state of mind which a natural state of the stomach, and quiet nerves attendant thereon, so materially promote. I and my wife have signed the total abstinence pledge not to use any alcoholic liquors, or keep them in our house, except for medicinal purposes; and, consequently, are not pressed to break it by our friends. This plan is by far the best; it sets a good example, and is a security against returning to an injurious practice.

DIET.—The following is the simple plan of diet we practise, both at home and at the Hydropathic Establishment, and which we can recommend from experience to all.

BREAKFAST.—Scotch oatmeal porridge, with little sugar and milk; brown bread and butter (*on no account buttered toast*); light boiled eggs, with cocoa made from the stewed nibs. A glass of water, with brown bread and butter, and a light boiled egg, is, however, far the most wholesome. Some cannot do with brown bread.

DINNER.—A moderate quantity of animal food, with simple vegetables, farinaceous puddings of rice, flour, tapioca, sago, semolina, &c., with stewed apples, rhubarb, or green fruit. Avoid all dried fruit, as the husk is indigestible, and what is called plum-pudding (made of flour, suet, and dried fruit) is especially so. When the puddings are removed, dinner should be finished; all after does harm. Water only for beverage. In all cases a very moderate use of animal food is the best. If any chest affection, or stomach or liver irritation, animal food is positively injurious from its stimulating qualities; and in cases of constipation of the bowels animal food will greatly increase the difficulty in the excrementary evacuations. In stomach affections, or weak digestion, I prescribe mutton, lamb, or fowl sandwich, without mustard, no vegetables, a little stewed rhubarb or apple. If persons will but confine themselves to simple food, they will be amply rewarded with good health.

EVENING MEAL, at six or seven o'clock, consisting of weak black tea, cocoa, brown bread and butter, eggs, or Scotch oatmeal porridge; nothing after this, except sometimes a glass of milk, without bread. Some constitutions may require something more, which should be a little bread and butter, and a glass of water about nine o'clock, or sago, or arrowroot.

ADVICE TO MINISTERS OF THE GOSPEL AND ALL PUBLIC SPEAKERS.—Dr. Jonah Horner, in his excellent work on "Health: what Preserves, what Destroys, and what Restores it," (Ward and Co., Paternoster Row, price 1s. 6d.,) in which there is also much important information in a popular form, says, "I know that many ministers of the glorious Gospel, who preach on week-nights as well as on the Sabbath, make a great mistake in taking suppers after their labour in the pulpit. I know well, that they are frequently urged to it by the kindness of friends with whom they have their temporary abode. Frequently, also, they have walked some miles to their work; and a sense of fatigue after sermon, with, perhaps, a somewhat urgent appetite, plead strongly, but wrongly for supper. Let such remember, that *sleep* is the only legitimate restorer of nervous energy; and that food is for the supply of the waste of the tissues. Again, a demand is always made on the nerves for the digestion of food. You see, then, that at bedtime, when the brain and nerves are in the most exhausted state, it must be improper to take food for that purpose which is best and most naturally answered by sleep."

This will be found quite true in practice, although it is so opposite to popular opinion. Abstaining from animal food altogether, when pressed with mental exercise, will be found of great service. The idea that strength cannot be kept up without the use of animal food, is shown to be fallacious by some of the first authorities on such subjects. The strongest, healthiest, and longest lived people in the world do not use animal food at all. The following statements as to the comparative ingredients of brown bread and pure blood show that, by a diet of pure brown bread and water only, the body will be supplied with perfect nutriment.—

BROWN BREAD, when unadulterated, contains all the elements of pure blood, the comparative ingredients are as follows:—

Pure Rich Blood contains—	Pure Brown Bread contains—
Fibrine	Fibrine
Casein	Casein
Albumen	Albumen
Colouring matter	Gluten
Fat	Oil
Sugar	Sugar
Chloride of Potassium	Chloride of Potassium
„ Sodium	„ Sodium
Phosphate of Soda	Phosphate of Soda
Lime, Magnesia	Lime, Magnesia
Iron	Iron
Starch	Starch

Some weak stomachs cannot digest brown bread.

Best Brown Bread. 1,000 lbs. of wheat ground all down together contain—		Fine White Bread 1,000 lbs. of finest White Flour contain—	
Muscular Matter	156 lbs.	Muscular Matter	130 lbs.
Bone Material	170 „	Bone Material	60 „
Fat	28 „	Fat	20 „

Taking the three ingredients together, the flour containing a portion of bran is far more nourishing than fine flour without bran. From the above it will be seen that good brown bread will alone support life and supply all the constituent parts of pure blood; and it is to be noticed that no other single article of food alone will afford this. There is often much adulteration in it, which cannot be detected, from the colour hiding deleterious substances introduced into the material. The best way to procure good brown bread is to take 14 lbs. of the best unadulterated superfine flour, adding to it 1¼ lbs. of sifted bran, and fermenting with yeast, made according to the receipt at the end of this book. Brewers' or publicans' yeast always contains deleterious matter, which is thrown up more especially in the yeast. German yeast is also highly objectionable. When it is proved beyond all doubt that homœopathic or minute doses of drugs produce powerful effects on the body, it is very obvious that persons taking not very minute doses of alum, &c. (which bakers' bread almost, if not quite, without exception contains,) must prevent any hygienic treatment keeping their bodies in health. The public will have very light and very white bread; and liquor that sparkles and foams in the glass, and potent to stimulate; the bakers, brewers, and publicans, consequently, are obliged to put ingredients* into their manufactures to please the palates of the public, to the ruin of the health of their customers; shortening their lives by slow, and often painful, disease.

DINNER PARTIES; *or the way in which persons prepare themselves for the doctors.*—When society is more fully alive to the wisdom of only eating and drinking to enable the body to go through the duties of life, without regard to pleasing the palate, life will then be greatly lengthened, and disease and suffering immensely decreased. Thousands now are in a constant state of nervous dyspepsia, and their lives rendered anything but happy, simply by their living more to please their taste than to sustain the body. I shall never forget joining a dinner party, which I will adduce as an ordinary illustration of the way in which thousands, who have the means for destroying their health and comfort, are indulging themselves daily, or several times a week. The party was at a gentleman's house in a distant part of the country, and will not, I know, be recognised by any readers of this work, except, perhaps, by the gentleman himself, should he read this book. It was on a cold winter's evening, about ten years ago, snow on the ground, and a severe frost; provisions dear, work scarce, and a time of unusual suffering among the poor. After we had assembled in the drawing-room, before dinner, the conversation turned on the topics of the day, and amongst other matters, on the great distress among the people around. The gentleman said that he had that afternoon visited the house of an old man, which I knew to be within one hundred yards of his own door. He saw a pot on the fire, with something boiling in it. He knew the old man, who lived alone, was very destitute, and he asked him what he had in the pot. He replied, he should not tell him. The gentleman went to the fire, lifted up the cover, and saw the pot filled with turnip tops, or leaves, which the old man was cooking for his only meal that day. This, of course, was heard with some expressions of sympathy by the assembled party, especially by the ladies. It was, however, too disagreeable for us to dwell upon, and so, after a little chat on more agreeable subjects, the servant announced the welcome summons to dinner; and away we went in procession to the dining-room, each gentleman taking a lady on his arm, forgetting all about the turnip tops, and such disagreeable matters, as we entered a large and well-lighted dining-room, displaying a well-furnished table, with a tureen of soup at one end, and a very fine codfish under cover at the other, and further adorned with various sparkling decanters and long-necked bottles of wine. I well recollect the sight which greeted us. After we were all seated, and the short grace pronounced, we fell to in good earnest, for we had a good deal of work before us, and even winter evenings come to an end. Some chose the rich white soup, made principally of cream, stewed veal, and fowl, almonds, vermicelli, onions, sweet herbs, &c. Some chose codfish and oyster-sauce; and with this course one or two glasses of wine were dispatched. I often found it rather disagreeably perplexing, and I am sure others did too, to know which to choose among so many good things; and rather annoying to be obliged to miss tasting some of them.

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* Porter and ale are adulterated with cocculus indicus, tobacco, grains of paradise, capsicum, ginger, quassia, wormwood, calamus root, carraway and coriander seeds, orange powder, liquorice, honey, sulphate of iron, sulphuric acid, cream of tartar, alum, carbonate of potash, oyster shells, hartshorn shavings, fabia amara, or nux vomica, and beans for fining.

Next followed roast beef, and boiled turkey with rich white cream sauce, some mutton chops, sweetbreads, &c. The latter dishes, for the information of the uninitiated I may state, are called *entremets*, or side-dishes, and are cooked in a scientific way, for delicate or curious stomachs which cannot feed upon plain beef or mutton. Potatoes, ornamented dishes of turnips (without tops) and carrots, which, with greens, vegetable marrow, and sea-kale, helped us to avoid feeding too heavily on solid flesh; and with the sherry and sparkling Moselle wine, gave great pleasure to the gratified palate. Many a pleasant sally of wit, and agreeable interchange of pledges by the wine-glass, heightened the pleasures of good fellowship; and as it was at the house of a religious professor, and some highly reputed religious persons being present, I believe all felt as I did, heartily satisfied with ourselves and the entertainment, and that we could not possibly be doing anything either wrong or inconsistent with our Christian profession, at least I am sure that was my feeling. I had so often been complimented for being a sound churchman, and as such a true Christian—and this by the ministry—that I for one was as content, and convinced on the subject, as if I had had Christ's testimony on paper in my pocket.

But to proceed with the business of the evening. It was now about seven o'clock; we had entered the room about six, and there was yet a good deal to dispatch. After the beef and turkey were removed, a pheasant, a hare, and a brace of partridges were uncovered; with dried bread crumbs, gravy, and smooth bread sauce cayenned for the game, and red currant jelly and force-meat stuffing for the hare. Of vegetables, little or none was taken, as we had already filled up some chinks with them, and they would prevent the fine flavour of game from being fully appreciated. Wine, of course, was from time to time supplied by the servants, who kept a sharp look-out on empty glasses, making it rather difficult for us to recollect how often they had been emptied.

The next course consisted of rich plum-puddings, brought in a blaze from spirits of wine being poured over them and then lighted, with custards, delicious tarts, syllabubs, creams, trifles,* jellies in pyramids, and sweets in various ornamental forms, according to the extent of the hostess's talent for invention. Champagne, as being of a more lively character, is served round with this course; and I well remember on this occasion, from the butler not having guarded his bottles from the severe cold, several of them were opened and taken away, not being found "up." These cost about 6s. 6d. per bottle, and when once opened are spoiled. After having solaced ourselves with these creature comforts—celery, cold and toasted cheese, with maccaroni and tankards of spiced ale, were introduced; and then again a short grace was said, and dinner finished. We had, however, by no means done either with eating or drinking. The table being cleared, fresh decanters of the best wine, and various fruits, were brought on, with brandy-cherries, preserves, biscuits, guava jelly, preserved pines, walnuts, almonds, &c. After the first round of the bottle, the ladies retired, and we sat chatting on various topics, sipping our wine, and helping ourselves to fruit, &c., as fancy inclined us. The feast and the good fellowship, with so many good people present, and the nicely warmed room, made us quite forgetful of the man with the turnip tops for his dinner and supper; and when, after a cup of coffee and a small glass of liqueur, we went into the drawing room, to the ladies, we found all still *couleur de rose.* We sipped our tea, enjoyed the usual amusements of the evening, and took our leave about eleven o'clock to our various homes: there arrived, we said our prayers, asking God to "give us day by day our daily bread: lead us not into temptation, but deliver us from evil." Those slept who could.

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* AN EXCELLENT TRIFLE.—Lay macaroons and ratafia-cakes over the bottom of your dish, and pour in as much brandy and sherry as they will suck up; which when they have done, pour on them cold rich cream custard. It must stand two or three inches thick; on that put a layer of raspberry jam, and cover the whole with a very high whip, made the day before, of rich cream, the whites of two well-beaten eggs, sugar, lemon-peel, and raisin-wine, well beat, with a whisk kept only to whip syllabubs and cream.

I have been thus particular in this description for the information of those who may read this book, but who may never have had the privilege of *good* (?) *society;* and I will also assure them I have given a strictly true relation, as many poor jaded cooks and butlers can avouch. I will also tell them, such feasts are of almost daily occurrence, at various seasons of the year, and at intervals throughout the whole year; and they are given and partaken of, not only by laymen, but ministers who esteem themselves both orthodox and evangelical. It is quite true, part of the viands I have described are sometimes omitted, not that there is either objection to serve or partake of them, but because it is not quite convenient for every one's pocket. After all this, the account has afterwards to be settled with head-ache, heart-ache, gout, liver disease, congestion of the brain, and a long list of diseases brought on by a few hours of sensual enjoyment; yet total abstainers from alcohol, and moderate livers, who enjoy good health, are more the butt of society than those who by such feasts act more like heathens of old than Christians. I have long taken leave of head-aches on this score. Eating and drinking only to live, I find, brings me excellent health; and the satisfaction of having ability to perform the duty God has assigned me brings a better reward. (See page 234.)

We now enter upon the subject of CLOTHING.—No system of bathing will avail to keep the body in health without attention to this point. It is the fashion at most Water Cure Establishments to prohibit all under-clothing. In some establishments no sooner does a patient arrive, but the doctor requests all flannels to be dispensed with, saying they prevent the free action of the air on the surface of the body. This theory, however, is found impracticable if patients are to make any progress in expelling morbid matter from the body, or quieting irritated nerves; for until the vis vitæ, or power of life, is raised and kept up by warmth, the cold only causes greater internal congestion. The vital power must first be strong enough to cause circulation of warm healthy blood on the surface of the body, then the patient may use lighter under-clothing, but not without caution in this uncertain climate can it be dispensed with altogether. Very fine woollen under-clothing even in summer keeps up an even temperature on the skin, and allows evaporation without a sense of damp, which perspiration causes to the wearer of either calico or linen. The demand for light gauze under-waistcoats made of foreign wool, or silk and wool, is very considerable, even for the East Indies (whence the name of India gauze) and other hot climates. The late Duke of Wellington found he could not keep his men in health with their linen pantaloons, and ordered the use of under-clothing and cloth trowsers. Dr. Gully, at page 413 of his book on the Water Cure, makes some sound and incontrovertible observations on this point. I have myself frequently seen much mischief and suffering caused by the attempt to harden the body by exposure; and have known cases wherein such a course pursued at some water establishments has resulted in permanent injury to the constitution, and some have resulted in loss of life. I do not by any means advocate persons coddling themselves in flannels; the rule with me is to advise all my patients, and others, to wear just sufficient to keep the surface of the body warm. In cases of invalids, where the vital power is low, warmer clothing is required than by persons in good health. More warmth is required by those who lead sedentary lives, and especially by those who have much brain-work; as such work draws on the electricity of the nutritive organic nerves in aid of the brain, and consequently lowers the vital power of the body, and neither invalids, nor any without a strong constitution, can dispense with it, and regain or preserve health. Warm clothing, especially in winter, preserves the vital heat, and, consequently, aids the action of the liver, stomach, and especially the bowels, as Dr. Gully justly observes: "Great mischief is done by attempts at hardening the body by exposure to cold; the blood is driven from the surface to the internal organs, causing congestion in them, and numbers in this way lay the foundation of very fatal complaints." The lungs are most sensitive to an overcharge of blood. The feeling of chilly or excessive heats must be the guide. In summer, caution should be used by not overclothing the body; but in autumn, when frosty nights come on, all persons, but especially the delicate, should begin to take precaution, by paying proper attention to their clothing.

EXERCISE.—Long walks before breakfast are injurious, as the stomach thereby becomes exhausted, has not power to digest the food taken at that meal, and acidity and head-ache are the consequences. A crust of bread, and a glass of water or milk, should be taken before going out. Exercising the limbs, lungs, and whole frame at proper intervals, is indispensable to health. A trial in Lings, or the Swedish Movement Practice, would be found very beneficial. (See Works, page 2.) Unless the body be properly exercised, the replacement of worn-out tissue and morbid matter is slow, from want of due warmth in the blood. By the full exercise of the lungs in good air, oxygen is freely brought in contact with the carbon, or useless matter in the blood, which is thereby consumed and carried off. Where persons cannot take long walks, they may do a great deal towards keeping themselves in health by exercising their limbs, filling the chest as full of air as possible, holding their breath, throwing out the chest, and, at the same time, working the arms; but numbers will be at no trouble of this kind, merely because they have no country walks near, or gardens to exercise in. Health, however, can only be enjoyed by unsparing effort, and will well repay any amount of trouble bestowed upon it, and self-denial practised for its sake.

It is a great prejudice to suppose that we cannot begin too early our intellectual education. We do begin too early when we choose that period in which Nature is still engaged in the development of bodily strength and organs, and where all her power is required for this purpose. If children are then compelled to sit quietly in a room, and their young minds urged to action, we take from them the noblest part of their strength, which is consumed in the function of thinking; growth is necessarily retarded, the limbs imperfectly developed, the muscles weakened, the digestion becomes bad, scrofula appears, and then ensues a predominance of the nervous system in the whole machine, which exhibits itself during lifetime in nervous diseases, hypochondriasis, etc. If the child is very early disposed to think and to learn, we should, instead of encouraging this tendency, as is usual, rather prevent its being indulged; for such precocity is in itself a disease, or at least an unnatural condition, which is to be avoided. Any unequal development of our faculties is injurious, and it is certain that mental exertions weaken the more as they are unaccompanied by bodily movement. It is also certain that he who between his mental occupations goes through suitable bodily exercises can work mentally much more, and with less injury to his health, than another who neglects his bodily powers. We will not increase the number of quotations in favour of these views.

Gymnastics act on the courage, and produce independence and presence of mind. No man can possess much courage whose chest is narrow, and whose lungs are not fully developed. Exercise, is, furthermore, an assistant to the intelligence, inasmuch as it is the most suitable interruption to mental labour, and the best recreation after it. Uninterrupted mental exertion makes the mind heavy, dull, and almost paralysed, and even gives it a false direction. A regard for the common good and a willingness for self-sacrifice are most developed in strong and healthy people, who, from their very bodily condition, are least likely to be dwelling with morbid solicitude upon their own feelings and circumstances.

INFLUENCE OF EARLY HABITS AND EDUCATION.

The development and influence of the nervous system in infancy and youth is of deep importance in the formation of character; but is a subject too abstruse and extensive to be more than alluded to in this little work. It will be seen from my previous remarks, that through the nerves all sensations, motions, and perception are conveyed to and from the soul or sentient part of our being; and it is only through the operation of these nerves or telegraph wires that we see the works of creation around us, that we hold converse with our fellow-creatures, that we act in the business of life, and become sensible of all impressions. Now we know that as by proper exercise in bodily labour the muscles and limbs are more fully developed, so it is the case with the nerves by proper training in early life. The ruin of many might be traced, if the truth could be ascertained, to their early training. Even in early infancy the methods used by some nurses, and foolish persons, to awe, soothe, or quiet infants,* leads to the unequal development of certain nerves, and which pernicious practices will afterwards become a source of misery to the religiously educated, and of final destruction and ruin to others not brought up with good example, and taught to keep their animal propensities in subjection to their reason and convictions. Many earnest Christians have to bear a thorn in the flesh from causes little thought of; and of which, if their parents had possessed the knowledge, might have been avoided: the foundation of bad passions, addiction to strong drinks, and other more insinuating sensual desires, have been laid in the mind during childhood, through particular nerves formed for righteous purposes, but when unduly and untimely developed by the folly of others were turned into a curse. Whitehead, on Hereditary Diseases, and M'Dougall, on Spermatorrhœa, give sad pictures of human suffering and misery, which might have been prevented by enlightened Christian discipline in parents and their offspring, had they known the true cause. Again, overworking the brain of young children, by the influence the nerves of sensation exercise over those of nutrition, stops the healthy development of the muscles, bone, &c., rendering such persons, when they come to act on the world's stage, utterly unfit for their duties. The soul has in consequence (as before observed) a poor, weak, disordered machine by which to perform its great duties; and we see such of weak constitutions, and wanting judgment and decision, easily carried away by animal impulse. How rarely do we see the children of our successful statesmen, merchants, and manufacturers, equal their parents in vigour? and this from the ambition of the parents in desiring them to excel in their education? On the contrary, how often we see or read of young men from the country making large fortunes, and distinguishing themselves by great powers of action, from their nervous system being fully developed, and their being mentally and physically uninjured by brain-work in their youth, so that when they come on the arena of action, they find in their well-developed frame a machine fully equal to perform the great work of life with ease, and bear its vicissitudes with composure. Seldom, however, is this constitution inherited by their descendants, for parents, overrating the value of a scientific or accomplished education, begin early to give their children a training in what they consider themselves to have been deficient. By this course they lay the foundation of nervous dyspepsia, with its long catalogue of miseries, to be handed down to posterity, increasing the evil from one generation to another, till the faculties of the offspring being thoroughly degenerated, hereditary insanity or imbecility is often the consequence. Children of the middle and higher classes are early allowed to use flesh meat and strong stimulants, which often induce inflammation and fever, carrying off thousands of such children, certainly not to the loss of society at large; such diet tends to inflame the animal passions, and produces anything but amiability of disposition Children should never have flesh meat or stimulants, if they are to have calm minds in sound, healthy bodies.

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* I do not allude to any drugs, but to actions.

ON THE PHYSICAL EFFECTS OF SNUFF-TAKING.—If tobacco be taken into the nostrils in the form of snuff by those unaccustomed to its use, sneezing takes place, which is a natural process to throw off the offending substance—as when irritated by dust or any other foreign body—for if not thrown out by sneezing, or washed away by the fluid secretion of the nostrils, giddiness and confusion of the head is occasioned, and a feeling of slight intoxication is produced; but by custom this is not the case. By continuing this irritating narcotic, the olfactory nerve, the organ of smelling, which proceeds immediately from the brain, is rendered less sensible, becomes blunted and impaired, and sometimes entirely lost. The schneiderian membrane, on which the nerves of smelling are distributed, becomes thickened and callous, and by degrees the nostrils are clogged up and rendered useless.

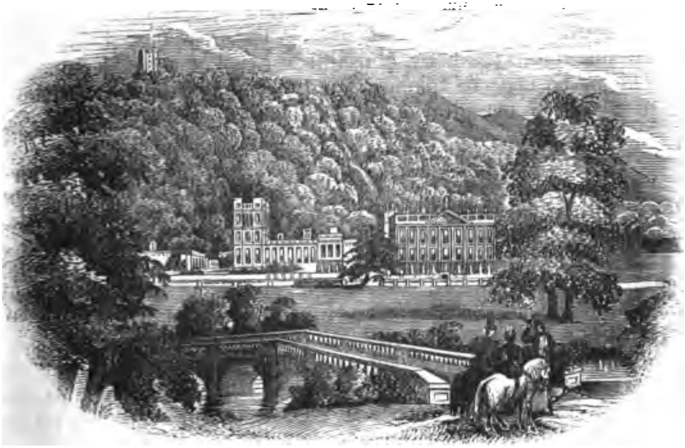
Sometimes the secretion of the nostrils becomes diseased, and makes the breath horridly offensive. I have come in contact with the breath of an inveterate snuff-taker, who made no complaint of disease, and never did I experience so "villanous" a smell; to me, the effluvia of a dissecting-room was preferable. Snuff-taking evidently affects the salivary glands, as the spittle is said to be bitter; "it causes, also, a sort of astriction at the bottom of the nose, which affects the palate, and consequently the speech. This gives the snuff-taker a constant desire of taking more and more, to rid himself of the stoppage."

All the senses are injured, and even the mind itself is sometimes affected by the pernicious habit of snuff-taking. The sense of *Smelling* is injured, by the snuff destroying the olfactory nerves; that of *Tasting*, by its deadening the nervous power of the nostrils and palate; that of *Seeing*, by its stimulating the nerves, inflaming the nasal and lachrymal ducts, and producing diseases of the eye. The *Hearing* is affected, by its inflaming and thickening the eustachian tube, that internal tube of the ear which opens directly behind the back of the nostrils, where the particles of snuff often lodge to an injurious degree; and, by its coming in contact with the brain and the nervous system generally, the memory is impaired, and the sense of *Feeling* becomes much injured.

It has been a matter of dispute which is the most injurious to the human system, the snuffing, chewing, or the smoking of tobacco. To common observers, snuffing might be considered the most harmless, not knowing that by the strong inspirations which are made when snuff is drawn into the nostrils, the powder frequently escapes into the stomach, and produces most pernicious effects. In whatever way tobacco is applied, whether in substance, smoke, or powder, the most serious consequences are, that they all act as a baneful narcotic upon the nervous system, producing dyspepsia, or stomach complaints, heartburn, flatulence, diseased secretions, indigestion, and a train of what are called nervous diseases. Whilst writing, I call to mind two ministers, slaves to snuff-taking, miserable dyspeptics; to use the language of one of them, who, when speaking of himself, said, "I am skinny misery." The other, in all probability, fell a victim to the wretched habit. His stomach had lost its power; digestion failed him altogether; his flesh wasted away; constant vomiting occurred, which ended in death.

In concluding these papers on tobacco, in which the injurious effects arising from its use have been shown, the best advice I can give, as a medical man, as a friend, and as a Christian, is to abstain from smoking, snuffing, or chewing. To the young, who have never been addicted to the use of tobacco, I would say, Never touch, taste, nor handle the filthy weed; but rather spend your money in the purchase of useful books, and your time in the cultivation of your mind. To those who use it I would say, abstain from it as from a real evil; no physical injury has ever been known to arise from leaving it off *at once*.

I have long been of opinion that ministers of the Gospel, and schoolmasters, who may be considered as leaders and instructors of mankind, should relinquish their offices altogether, if they have not sufficient moral courage to give up the use of tobacco, as their bad example frequently does more injury than their preaching and precepts do good.—*Ipswich Temperance Tracts.*



CHATSWORTH, THE SEAT OF THE DUKE OF DEVONSHIRE.

DIVISION III.

BATHS AND PRACTICE OF HYDROPATHY.

WITH ILLUSTRATIONS.

THE DRIPPING SHEET.—Take a linen or coarse cotton sheet, and dip it in water; the patient, undressed, puts it on the same way as a cloak, leaving the head out, and rubbing the body well from one to two minutes, the chest first. Then, after dipping the feet in cold water, put on a dry sheet, in a similar way, and well dry the body, and dress immediately. Very delicate persons may rub the body with a dry blanket instead of, or after, the sheet For very delicate patients, the water may be sixty or seventy degrees, but cold is generally the best; when dressed, drink a little cold water, and take exercise. Another method is to have a sheet dipped in warm or hot water first applied, and then followed with one cold, or nearly so. If liable to determination of blood to the head, or the vital power be low, the patient should stand in a foot bath of hot water while going through the process. It cannot be too well known that all violent shocks to the system should be avoided. The dripping sheet will be found a good tonic application for a fatigued system, and a very safe and mild remedy, as the cold sheet quickly becomes warm on the body, and causes a general glow through tho frame. Two cold dripping sheets, one after the other, when they can be borne, are very refreshing. Sponging the head with cold water before having the dripping sheet, or a wet cloth put round the head, is useful in cases of stout persons. (Any of the baths may be taken not only without danger when the body is in a state of perspiration, but with more advantage.)

WET PACK.—Spread a mackintosh sheet, or thick quilt, on a mattress, and over that one or two dry blankets; then take a thick cotton or linen sheet, (coarse cotton, which is best, may be bought for about 4s. per pair,) dip it in cold water, and wring the water out as much as possible. This is best done by two persons, the sheet being doubled, one taking hold of each end and twisting whilst any water can be got out. The patient undressed lies down upon the back on the wet sheet, holding up the arms while one side of it is thrown over the body and tucked in; then the patient puts the arms down by the side of the body, and the other part of the wet sheet is thrown over all and tightly tucked in: the blanket and mackintosh are then brought over, on each side, in a similar manner; a bed or plenty of clothes is next put on the patient, so as to keep the body warm. Put a small pillow on each shoulder, or more clothes, to keep the warmth better in about the throat and shoulders. In case of sore throat, wring a napkin out of cold water, double it into fourfold, lengthwise, and before lying down wrap it round the throat, over which put a length of flannel, one and a half or two yards, then lie down on the sheet and go on with packing. It is important, in packing, that the sheet be well wrung out;* that the patient be tightly packed in the sheet and blanket, with the bed or plenty of clothes on, and the wet sheet and blanket closed round the shoulders and neck. The wet sheet must not be left in a lump about the feet. It is better to wrap the legs to the knees in a dry blanket before winding the wet sheet round; and if the feet do not get warm, apply a hot-water bottle to them. After being in pack one hour, or one hour and a quarter, take a cold dripping sheet or shallow bath, after which a dry sheet or 19 rubbing sheet at 70 degrees, if delicate, standing on a hot pad or in hot water for the dripping sheet; dress quickly, and then take moderate exercise.

A good addition to these directions is to dip a napkin in tepid water, and after wringing the water out, wrap it round the head while in the pack; this prevents any tendency to head-ache, and is very soothing. Wet packs may be repeated several times in the space of twelve hours in cases of fever, cold, constipation, inflammation, or violent bilious attacks. In cases of scarlet or typhus fever, the sheet should be wrung out of hot water. In cold, or ordinary stomach disorder, I find no plan so efficacious as wet packs given every day or every other day, or twice a day. We now mostly use the fomenting-can in packing, filling it with hot water, and laying it on the blanket over the chest and bowels; this aids the progress and good effect of the pack. Wet sheet packing should seldom be used by delicate persons with low power of re-action. Fomenting or towel pack, as under, is far better in such cases. Still there is no process so efficacious as wet packing for bilious attacks, bad cold, indigestion, and constipation of bowels; and if the body be too low for re-action, and a person remains cold after a pack, a steam bath, hot bath, or hot sheet, followed by a cold sheet, will soon restore the animal heat. For persons in health, a wet pack once a week is a good preservative of health.

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* I use a pair of rollers in a frame

Some persons will naturally shrink, from feelings of delicacy, in adopting this treatment; but a pack may be managed without any unpleasant exposure of the body, by having the blanket and wet sheet over it laid on the mattress, the attendant then to retire, or turn aside, whilst the person undresses, and lies down on the back upon the wet sheet, and pulls one side over the body; the packing can then be proceeded with. All the baths may, with a little management, be gone through without any indelicate exposure.

SOOTHING FEVER PACK.—Use two towels instead of the wet sheet, one below and the other above; after the patient has been in pack ten minutes, take the towels out, and have two other towels wrung out of cold water, to replace them; wipe the body with wet cloth; go on replacing the towels every ten or fifteen minutes for one or two hours; sipping cold water during the time, then take a shallow bath, or tepid dripping sheet This reduces fever rapidly. See 221 bath list more particulars.

The above we apply in delicate cases, or where the patient is very low in vital power, allowing the towels to remain without replacing for one hour, and following with dripping sheet or shallow bath, 70 degrees

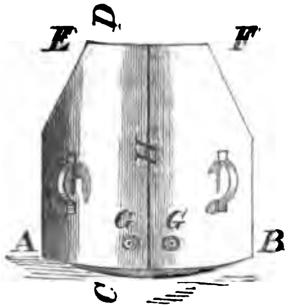
DRY RUBBING.—This is an important application, especially where the vital power is too low to bear much application of vapour baths, fomentation, packing, &c. We can get surface circulation by this process when we dare not attempt any other mode, and in all cases, whether the vital action is strong or feeble, it is highly beneficial, especially if the operator is strong and in good health, as he communicates a good deal of vital electricity. At Dr. Elliotson's Mesmeric Institution, London, they profess, and I believe with truth, to restore or relieve cases solely by this plan. For ordinary dry rubbing let the patient stand on a hot pad, or in hot water, and have a blanket thrown over the body, leaving the head out; rub the body under the blanket for ten minutes. If vital power be very low, as in some cases of consumption and liver disease, we rub with a little dry mustard, and leave the mustard on till the next bath.

TOWEL RUBBING.—A plan for moderating the application of the dripping sheet, or where the person cannot rise out of bed, is to spread mackintosh and blanket under the patient; then take a towel, dipped in cold or tepid water, according to the strength of the patient, slightly wrung out, with which gently rub the upper part of the body, and dry it: then cover that part, and do the same to the other portion of the body.

PACKING LIMBS ONLY.—This we practise a good deal in cases of rheumatism, dropsy, inflammation, paralysis, or numbness of limbs, by taking a strip of swan's-down calico, five or six inches broad, wrung out of cold or tepid water, and wrapping it round the limb, then a strip of mackintosh, and then strips of flannel, two thicknesses over all. Re-wet the bandages every two or three hours, at same time sponging the limb with tepid water, and keeping the pack on night and day until it produces what is called crisis: continue this until the crisis is fully out; then treat the crisis by putting a piece of linen loosely round, and sponge after with tepid water. This does wonders in expelling morbid matter, and restoring vitality. Varicose veins are by this process entirely cured. We use also a wrapper, made similar to half a pair of pantaloons, inside two thicknesses of thick cotton, next a covering of flannel, and next mackintosh, the cotton wrung out of tepid water; a dry flannel wrapper over all this is worn night and day, and very efficacious in sciatica cases. Or 195½ bath list.

DRY PACK.—Lay two or three blankets on a mattress; the patient then lies down upon them undressed, and is packed in the same way as in the wet sheet pack; a piece of mackintosh cloth placed under the blankets, and wrapped round the body over the blankets, is more certain to produce perspiration. The patient should remain in, after the perspiration has begun, from fifteen to twenty minutes, and afterwards take a dripping sheet, or cold shallow bath. Whilst in the pack a wet cloth should be kept on round the head, and a tumbler of cold water taken. The dry pack is to produce a greater degree of perspiration, and is useful in chronic rheumatism, or chronic liver cases; but from the length of time required in most cases we do not often use it, preferring the spirit lamp.

FOMENTATION.—This is a very beneficial application which we have adopted. First, spread a mackintosh sheet on the bed, then two blankets, on which the person with only the trunk part of the body undressed, or wholly undressed, is laid; one of the fomenting flannels, previously wrung out of hot water, is placed under the back, and another over the chest and bowels; then bring one side of the blanket over, put the arms down, then lay the hot can on, and put the other side of the blanket over, then the mackintosh; the person lies quietly from three quarters to one hour,



FOMENTING CAN.

10 in. E to F; 16 in. A to E; 14 in. C to D; 18 in. A to B. 1 in. thick, slightly arched. H, a joint with wire, to divide the can for separate use. G, screw plugs to fill the can with five pints of boiling water. (See pages 12, 116.)

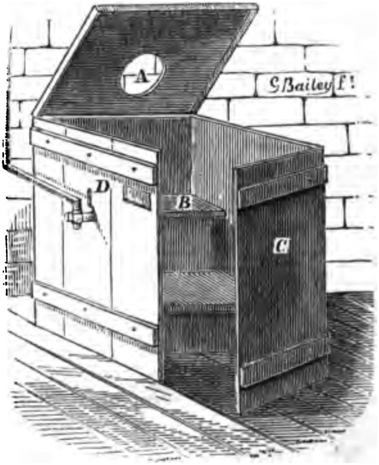
and will often go to sleep. Afterwards wipe the trunk with a towel wrung out of cold water, and dress, or have a cold dripping sheet, or cold or tepid wash over.

This application is very mild and efficacious in chest, liver, and stomach affections, and may be frequently used without any danger of weakening the frame, and with only partially undressing. A wet towel round the head, with the feet in flannel, and sipping cold water, is used in some delicate cases. The fomenting flannels are each made of six thicknesses of flannel, twenty-one inches square, and quilted to keep them straight.

The use of this fomenting-can would often prevent serious illness, and is a perfectly safe stimulant and counter-irritant, drawing blood to the surface, and thereby relieving internal congestion, the cause of so much mischief. Hot mustard and water foot and hand baths repeated, we find, does wonders in relieving congestion, and no harm can possibly arise from their frequent application. (See page 12.)

DRY FOMENTATION FOR BOWEL COMPLAINT.—First put the legs in hot mustard and water fifteen minutes, then lie down in bed wrapped in two dry blankets, and have the hot can over the bowels under the first blanket for half an hour or more, and no wash after. The horizontal position should be kept as much as possible in this complaint.

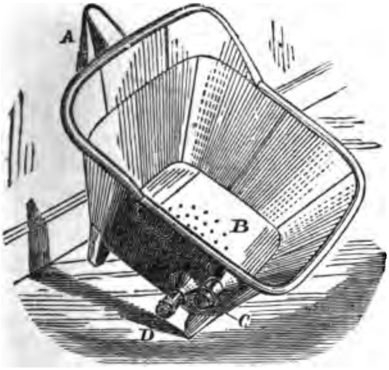
VAPOUR BATH.—The patient, undressed, sits on a chair, a blanket is put round, covering the whole person in the chair, leaving out the head; then coverlids or rugs, or anything of the kind, are put over the blanket. Take care to close the cloths well round the throat, and let them fall on the floor so as to keep in the steam. Then take about a gallon of boiling water in a pan, put a hot brick or a piece of hot iron, or hot cokes, in the water, place the vessel under the chair, closing the clothes well up, and perspiration will soon be produced. During the bath some cold water should be taken by sips, and the forehead bathed with cold water with a cloth or sponge. After the patient has perspired about ten or fifteen minutes, all the cloths must be thrown off, and a cold dripping sheet or shallow bath given. The heat should not be strong at first, and this is easily regulated by raising the blanket a little from the floor for a short time. The feet in a pan of hot water, and a napkin wrung out of cold water, frequently renewed, held to the head, prevents headache. This bath is very useful in all cases of over-fatigue and chilliness of the frame, and may be used, with great advantage, in keeping the body in order, morning, noon, or evening: for rheumatism and paralysis it is very efficacious. At my establishment I use a box for the purpose, into which steam is conveyed from a boiler, and such boxes my carpenter will supply to any one on application. Patients may soap themselves in these vapour baths to advantage. I use this bath, several mornings or evenings, five minutes:for weeks without any weakening effects. (See page 259, " Portable Steamer.")



STEAM BOX.—Used also for Spirit Lamp. B is the seat the person sits upon, then close the door C, and put down the lid, the head going through the hole A, 12 inches in diameter. 4 feet high, 29 inches wide, 34 inches in depth from back to front, outside measure. Put a towel round the top of the lid at A, to keep in the steam; sip cold water; have a wet napkin round the head, and the feet in hot water. D is a steam pipe, with a handle outside and a handle inside, for the bather to alter the force of steam at pleasure. The steam is sent in under the seat, and on the front of the seat hanging down to the foot-board is a curtain of mackintosh or linen, to keep the force of the steam from the legs. This bath is used from five to ten minutes, or in some cases fifteen minutes, and after it a cold dripping sheet, a cold sponge, or cold shallow. A fomenting pad wrung out of hot water, and held to the stomach and bowels while in, is useful in some cases, and soap the body well.

For spirit lamp, introduce two spirit lamps, or gas jets, near the foot-board. (See also page 259.)

SPIRIT LAMP.—This is given in the same way and followed by the sheet or bath, as used after the vapour bath, only instead of the hot water and brick, a lighted lamp, or saucer, containing spirits of wine, or rectified spirits of naphtha, which is cheaper and quite as good, is put under the chair. I use gas at my free hospital. This bath is of great use in reducing fat and hardening the muscles. I have reduced a patient sixteen pounds in nine days, and brought him from a state bordering upon apoplexy, to walk ten miles without fatigue, taking away all uncomfortable feelings, especially in the head. With perfect safety it may be used once a day, for a week or more. In the forenoon, or afternoon, is the best time. A wet cloth should be put round the head, and a tumbler or more of cold water administered by sips, during the application, and the feet placed in a pan of hot water; a napkin wrung out of cold should be held to the stomach while in the bath, and re-wetted: in cases of venous apoplexy it is very efficient, used with caution. This bath is also useful in first stages of dropsy, and chronic liver disease, and is not weakening. A mackintosh, or coarse linen or calico petticoat, oiled with boiled linseed oil, to make it air-tight, is very suitable for the steam bath or spirit lamp. It should be 60 inches long, 72 inches wide at the bottom, and 36 inches at the top, with hole for the head, having a narrow piece of calico and a string to draw round the throat. When the patient is seated undressed on the chair, put the petticoat over the person without any blanket, and the hot brick and water, or spirit lamp, underneath. A blanket is useful to be laid on the floor round the petticoat to keep the heat in. I supply the mackintosh petticoat to patients, and they can be made so as to serve for wet packing as well. I had one made for a Major in the army to take about with him.



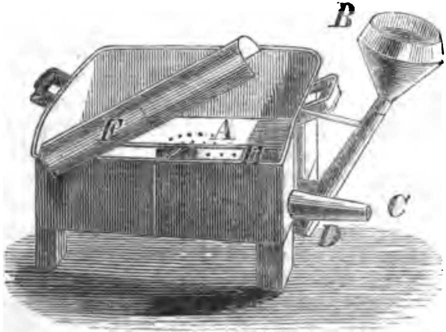
12 inches deep in front, 16 inches back, 14 inches square in bottom inside, 21 inches width in front and back.

SITTING OR SITZ BATH.—A common wash-tub or any vessel about twelve inches deep will do. Put water in to the depth of five or six inches; sit down in it covering the person over with a blanket, either leaving out the head or not. Entire covering keeps in the bodily heat better when the person is wholly undressed. It may be managed without entirely undressing; gentlemen only taking off the coat and vest, letting down the trowsers, and drawing a sheet between the legs. I have invented a running sitz, which can be used either as an ordinary one, or as a running sitz with a small quantity of water; by taking off the screw at D, or having it to the depth of C, pouring in water at A, the water coming in at B, and running off at C. A cold sitz bath for six minutes, or running cold from two to four minutes, is very refreshing after fatigue or mental exertion; and the habitual use of it, as often as convenient, will tend to produce good action of the bowels, and healthily brace the nerves of the spine and brain. For constipation, a sitz, six to ten minutes, cold, in summer, and at from 70 to 75 in delicate cases — a can of warm water poured in first, and reduce to cold, or to sit in the empty bath and have it filled gradually, with the feet in hot water, is preferred by sensitive persons. For piles, the water should be from sixty-five to seventy degrees for ten minutes, and afterwards cold for a minute; wearing a wet body bandage night and day. (165, 172, bath list.)

WASHING SITZ.—This bath is the most convenient for ordinary use, or when travelling. I have some water put in over night, and on rising I spread my mackintosh sheet on the floor, set the bath in the centre, holding the head over the bath, squeeze water from the sponge over the back of the head and the face, sit in it from five to eight minutes, with the feet out, body covered with a blanket, then rise and soap the body well over with common yellow soap rubbed on a small flannel pad, standing in hot water, or not, as convenient; again, sit down in the bath, and, with a sponge, sponge the body, squeezing from the sponge quantities of water over the shoulders; then stand up in the bath and sponge the legs and arms; then dry with a coarse linen or cotton sheet; the latter may be had for about 4*s.* per pair at any draper's shop, and are such as are mostly used for bed covering by the labouring class; if the body is dried with a napkin, much bodily heat is lost by exposure, and which often does injury. I generally prescribe feet in hot water, or sometimes in hot mustard and water, while sitting in bath, for invalids or delicate persons, and to dash them in cold water on rising. (See 95 bath list.)

I cannot too highly recommend, from its good effects, soaping the body well with the common yellow soap; it should be done very frequently, and standing in hot water; then sponge the soap off with cold water, which renders it quite a luxury. The seven or eight millions of pores in the skin discharge the waste matter; and if the surface of the skin is not kept clean, the absorbents, as I have remarked, take back the waste matter, which returns again into the blood, causing incalculable mischief.

LADIES' RUNNING SITZ.—Double a dry sheet, and lay it over the front of the bath F, and sit upon it, and when rising, draw it round the legs to dry with. I have invented this bath, which can be used without any undressing. It should be in every lady's room, and if used as commonly as the wash-hand basin would prevent weakness of the spine, and the long list of distressing weakening ailments to which all females are liable. It has saved lives already by stopping hæmorrhage, which no other means made use of could effect. For this purpose it is used every one or two hours, two minutes at a time, with cold water;



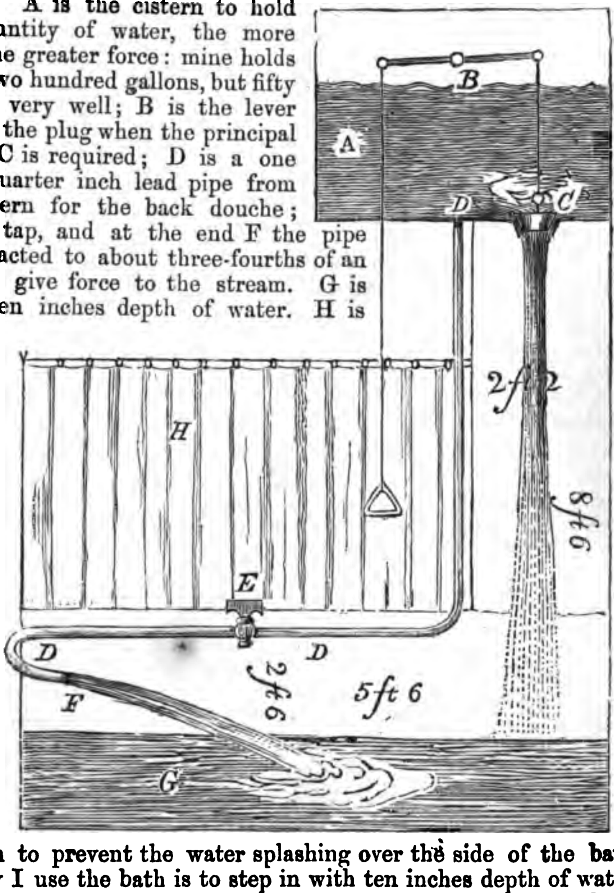
17 in. wide, 18 in. long inside, 6 in. deep in front, 9 in. in back; reserve E 2 in. wide, 19 in. whole height in front.

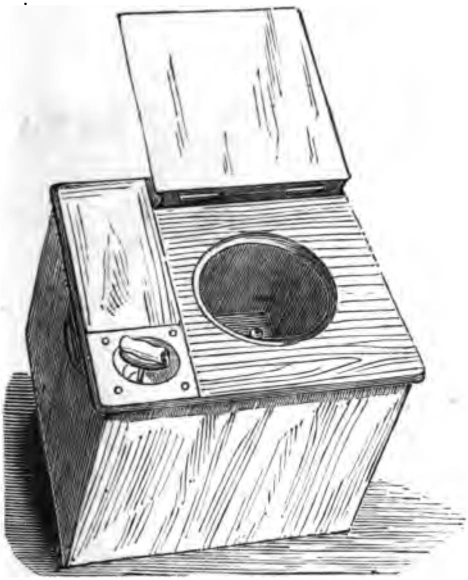
and this may be done with safety by the most delicate. Ordinarily it is used as a sitting bath, for five, ten, or twenty minutes, and may be made running cold by an attendant pouring in water at the funnel B; F is the cover for the reserve E; D is the pipe to carry the water to A, where it rises up in the centre, and passes off through the reserve at E and the pipe C. The reserve is to prevent the water coming over the front, when sitting down. After walking or becoming heated, great benefit will be derived by its use with cold water. For piles, the water should be 65° to 70°, used twenty minutes at a time, and one minute cold, wearing wet body bandage night and day, as before mentioned, and if bandage not warm, put flannel over, especially at night.

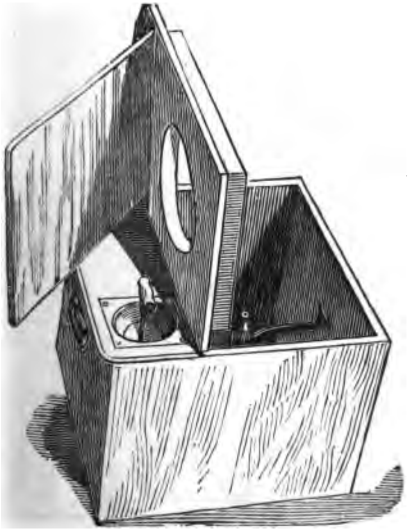
DOUCHE BATHS.—There are various modifications of these applications; the principal is the one, which from a cistern, containing from one to two hundred gallons of water, a short tapering pipe contracted to 1¼ inches at the point, or lower aperture, with a valve inside the cistern, worked by a lever, allows the water to fall with considerable force from a height of from eight to twelve feet. This bath is one of great service in many cases, and for ordinary use it is far more efficacious than the shower bath, causing less shock, as the water, as soon as it touches the back, shoulders, and hips, produces instant reaction and warmth. It may be used with perfect safety by any one in ordinary health, and when the body is in a state of perspiration it is a luxury and highly beneficial. It may be used too with great advantage when the body is in an ordinary state, taking care that the stream does not come upon the head or chest, but on the shoulders, spine, hips, and bowels; washing the head in cold water first, or putting on a wet bandage. Ordinarily I use it for about twenty or thirty seconds, or while fifty can be counted; it is stimulating and strengthening. Standing in hot water adds to the efficacy and safety of this bath, but is by no means necessary except where there is congestion of the head, or very full habit.

In cases where there is any affection of the stomach or liver, a flannel pad wrung out of hot water should be previously tied round the chest, or a dry chest compress put on, and stand on a hot flannel pad, or in hot water. In cases of *Chronic Rheumatism* in the knees and ankles, the patient is wrapped in blankets covered by mackintosh or oiled cloth, and set in the bath, and the douche allowed to fall on the parts affected; this is to rouse action in the parts, and will often succeed when no other plan will. Another plan for delicate persons with affection of the spine, or rheumatism in the shoulder, is to sit in a shallow bath with the water ninety degrees, having cold water directed by a pipe from the douche or some other source on the parts affected, until the water in the bath becomes too cold for the patient to remain in. We have gutta percha tubes attached to the main pipes or cisterns, to spout on any particular part wanting vitality; the patient being undressed, and partially enveloped in blankets.

THE DOUCHE AND SHALLOW BATH COMBINED, which I have for personal use, is very effective, and far superior to the common shallow. A is the cistern to hold any quantity of water, the more water the greater force: mine holds about two hundred gallons, but fifty will do very well; B is the lever to draw the plug when the principal douche C is required; D is a one and a quarter inch lead pipe from the cistern for the back douche; E is a tap, and at the end F the pipe is contracted to about three-fourths of an inch, to give force to the stream. G is about ten inches depth of water. H is a curtain to prevent the water splashing over the side of the bath. The way I use the bath is to step in with ten inches depth of water, draw the curtain, and then turn the tap E on immediately, sit down in the bath, the spout pouring water on my back. I rub well with water, and throw it up into the face. Then turn round and let it spout on the throat and bowels, but not on the chest. The open or principal high douche C I use separately, having no water in the bath, except what runs in from the column, letting it fall on the spine, shoulders, and bowels, but not on the head or chest. A large tap should be provided to allow the water to keep running off from the shallow bath C when the large douche is used. I have also hot water laid on for a hot bath S using cold douche after.





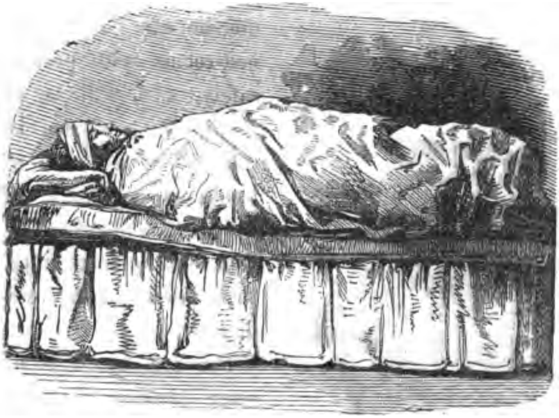


Mr. Smedley's newly invented ascending douche can be used in bed-rooms with perfect safety, and will be of the greatest service in cases of piles and of weakness or disease of the prostate gland or rectum, and to strengthen those parts and prevent disease.

For females it is of great importance, and may be used with perfect safety, the action being delicate, and can be used often without undressing.

It acts also as a slight enema very beneficially. The water need not be renewed above once a week. The pump is double action, and easily worked. Price, complete, £3 5s. To be had of John Higdon, Lea Mills, near Derby.

Warner & Co., Jewin Crescent, London, supply the double action pump we put in these. Warner & Co., Jewin Crescent, London; a single action pump with air vessel, they say, works easier.



The Wet

Sheet Pack

or Envelope.

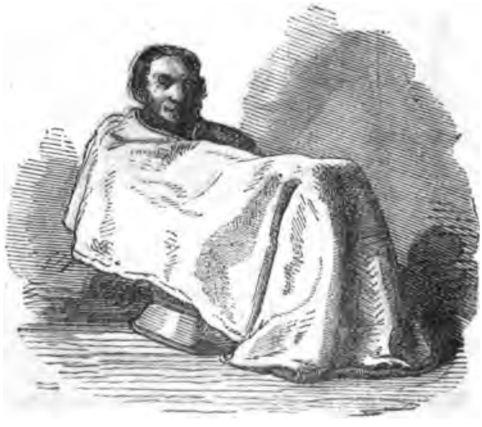
See page 60.

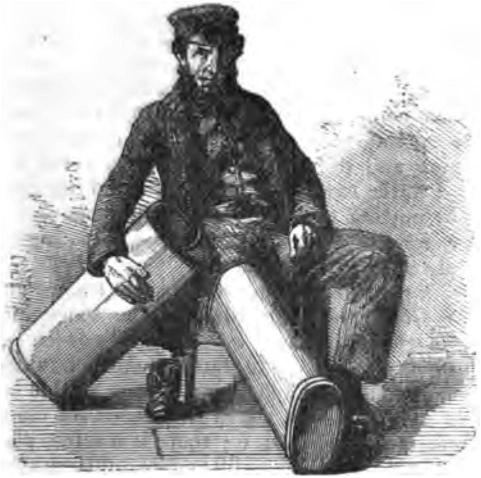
* * *

The

Sitz Bath.

See page 65.





The Leg Bath.

29 inches long.

9 inches back to front.

6 inches wide.

Orifice, 6½ inches.

* * *

Hand Bath in use.

Centre piece, 7 inches broad.

6¼ inches diameter.

10 inches each side piece.

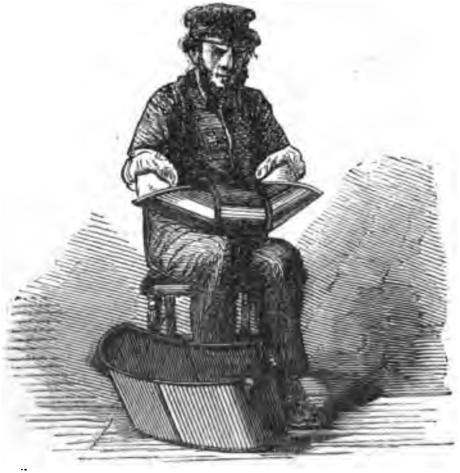
Hand and Arm Bath.

23 inches long.

6½ inches wide.

3½ inches deep.

2 inches curve.

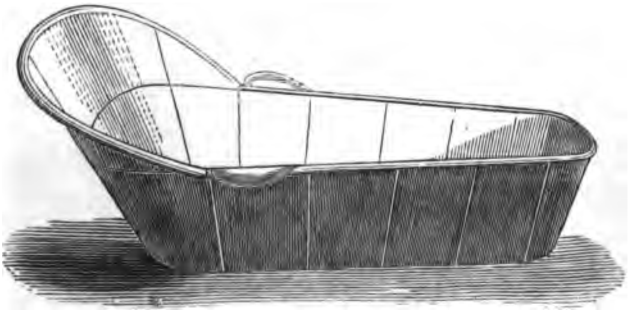


DRIPPING SHEETS IN COLD WEATHER.—I spread my mackintosh sheet on the chamber floor, and have a cold dripping sheet on rising, from November to May. It causes a good re-action, and is more certain; and for ordinary practice in winter it is the best. A cold dripping sheet at any time of the day when fatigued is very refreshing. As I have before remarked, it allays feverishness, and is easily managed by putting the wet sheet on like a cloak, and with the hands out rubbing and drawing the sheet backwards and forwards over the back. I never have any assistance in taking dripping sheets, or drying, or putting on bandages; by performing the operation myself I sooner get re-action. I cannot speak too highly of the good and safe effects of the dripping sheet.

HOT PLATE.—I have a galvanized iron vessel, 4 feet square and 3 inches deep, with some cross-bars inside, dividing the space into parts 6 inches square, this is laid on the bath-room floor filledwith hot water and a flannel pad over it for patients to stand upon when taking dripping sheets, and being dried after the shallow; the use of this is a luxury, but not necessary. The cross-bars are to strengthen the vessel to bear the weight of a person standing upon it; there is a screw plug on the surface, and one in the side, by which to fill and let out the water.

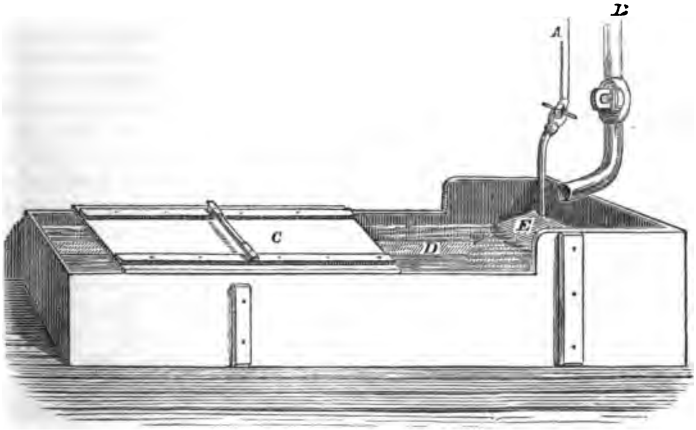
STOMACH PACK.—When the stomach is very irritable, it is best to lie in bed and remain perfectly quiet; taking no food, but sipping cold water; having a towel doubled and wrung out of cold water laid over the stomach, and over that a good thickness of flannel or blanket to preserve the animal heat. Re-wet the cloth every ten minutes, and take nothing but water until sickness is stopped, if even it last a day or two, as no harm will arise from abstinence from food, so long as the stomach is irritable In some severe cases we have found this the only remedy. (See 50, bath list.)

SHALLOW BATH.—This is a very useful bath, and more

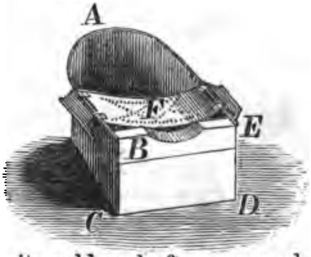


5 feet 6 inches long, 26 inches wide, 13 inches deep.

effective and tonic than dripping sheet. The bather lies down in it half filled with water, and rubs quickly the legs, arms, and body; or an attendant assists, if there be one. It is best for the bathers, if able, to use action in rubbing themselves well, as it aids the good effect of the bath. One or two gallons of cold water may be poured on the spine before coming out, but is not quite necessary.



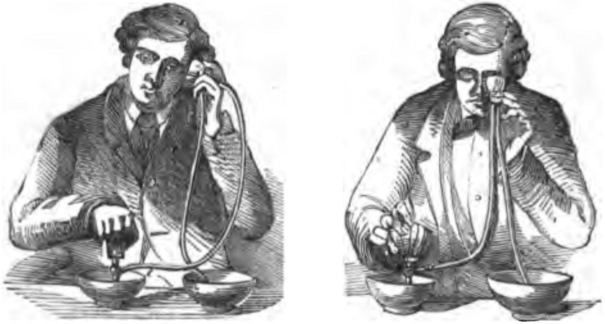
WOOD SHALLOW BATH, such as I use at my Establishment and free Hospital, is made of one inch deal boards, grooved and tongued, not lined or painted. It holds water well, and a good deal of it, and there is more room for the bather to lie at ease and soap well. Outside measure, 6 feet 5 inches long, 27 inches wide, and 17 inches deep. E is a flat board, 4 inches broad, to lay the back of the head upon, and it slopes down into the bath to support the back. C is a loose cover, merely put on to avoid exposure of the person. A is a steam or hot water pipe, which is carried round the bottom of the bath under a board, for a hot bath. B is a 1½ inch pipe brought to 1¼ inches, for a back douche, and to fill the bath. A plug at the corner lets out the water.



HEAD BATH.—An excellent application for soothing and cooling the head. The person lies down on the floor with a pillow under the top of the shoulder, and the back of the head laid on at F, which is a piece of perforated zinc, connected to the sides of the bath, by elastic straps the head is pressed down into the water put into the bath. Where there is much excitement of brain, the water should not be quite cold, and often renewed, as it soon becomes warm. For extracting heat from the head, it may be used from twenty to thirty minutes at a time, and not unfrequently brings a soothing sleep while being applied. The forehead should be sponged at the time with the same water; or a cloth frequently re-wetted, and laid upon the forehead for a few minutes. A cold foot bath, after a head bath, is good for re-action. (See 131½.)

The **Head Bath** is 10 inches wide at C D, 13 inches long at B A, and 6 inches deep inside. B is a reserve, 1 inch wide, with a loose cover, to hold any water that may slop over, and so keep it from running down the bath. A tap should be inserted into the reserve at E, so as to let water run through on pouring more in to keep the water cool; a round dish, three inches deep and twelve inches diameter, will do very well.

FOOT BATHS.—Walk about in cold water at a depth of five or six inches, or standing in a tub, stamping with the feet from two to five minutes; then rub them dry and take exercise.



Eye and ear douche we find very useful. Savory and Moore, inventors, 220, Regent Street, London; or through any chemist.

EYE BATH.—Eye-glasses are sold at the druggists, the application of them is as follows. For weak sight without inflammation, fill the glasses with water 60 degrees and in a stooping position, to keep the water in. Then raise the head with the glasses fitting over the eye, and open the eye-lids to allow the water to come in contact with the eye-ball. Keep the glasses on five minutes, then change the water; and while changing let the eyes face the strongest light. Thus go on applying water in the same way five minutes longer, repeat this three or four times a day, after a few days use only cold water. If convenient, pack the forehead with a piece of calico wrung out of cold water, and oiled silk over during the application. Inflamed eyes treat as follows:—Use head-bath cold or rather tepid; foment the eyes and forehead for ten

minutes with hot flannel pads wrung out of water as hot as can be borne while using the head-bath, then pack the forehead as above with wet calico, and apply the glasses, with water 70 degrees to commence with for three minutes, the next three minutes 60, and then three minutes cold; and in changing the water open the eyes and face the light. When the inflammation is subdued, then treat the same as for weak eyes; for accidental injury apply the same.

The patient must not be alarmed at the eyes becoming much blood-shot by the use of the glasses at first; this is producing the desired effect by stimulating the circulation, and will subside in due time. At bed-time foment the eyes with hot water five minutes, then pack as above with wet calico over the forehead, and two pieces of damp spongio over the eyes for the night. The ordinary method of shading the light from weak or inflamed eyes is highly injurious, and often results in permanent injury. As inflammation of the eyes is often a secondary symptom, showing inflammatory action in the stomach or other viscera, diet and other precautions are absolutely necessary for recovery. Avoid all stimulants; adopt the diet recommended in this work, wearing body bandage; and take the usual cold or tepid dripping sheets, and sitting baths as for ordinary health. If there is much mucous inflammation shown by the red tongue, &c., more active general treatment will be required before the eyes can be restored to healthy action. (See bath list 227.)

COLD FEET.—An invariably successful and perfectly safe remedy in all cases, is to put on a pair of cotton socks, wrung out of cold or tepid water, with a pair of thick lamb's wool over, and to sleep in them. Wash the feet in cold or tepid water on rising. We also apply cotton gloves wrung out of water, with dry woollen ones over, and in some cases wear them night and day; they draw circulation to the hands, to the relief of other parts.

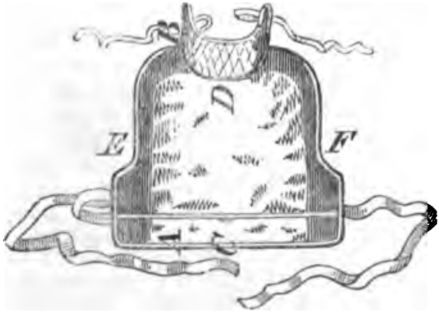
BACK WASH.—The person sits on a board across the sitz bath, or a tub, in which is some cold water; the attendant takes a towel, dips it in the water, and throws it open on the shoulders and back, drawing it downwards, and keeps renewing it in the water; apply this for five or six minutes. It is very strengthening and refreshing to the back, and a very mild application; and in cases of head affection, have the feet in hot mustard and water. (See bath list, 120, 121.)

BODY BANDAGE OR WET COMPRESS.—This is our sheet anchor in most cases of disease, and also for ordinary slight affections of the stomach, bowels, or kidneys. For those in ordinary health, it may be worn or thrown off at pleasure without any risk of cold. It will keep up vital heat in the body when lowered with fatigue; or, in case of having fatigue to go through, it will be found highly useful and always safe to use. One yard of swansdown calico, ten inches broad, sewed to the end of 1¼ yard of mackintosh. Wring calico out of cold or tepid water dry as it can be done; put the wet part round the body, and the mackintosh over, and if not warm when on put flannel over it, or 2½ yards of swansdown alone will often answer—one yard wrung out of water, and then wrap dry part over. See bath list, 163 to 173.

The reason why bandages are only partially used at water establishments, thus causing great delay in restoring vital action, is owing to the imperfection of those used; they often really doing more harm than good; which will be the case if a feeling of warmth is not produced by them. Body bandages can be thrown off at any time without any substitute, and without any fear of taking cold.

The body bandage is of great importance, and very beneficial, in constipation of the bowels, liver, stomach, and affections of the kidneys, especially in pregnancy and internal irritation. It should be re-wetted morning, noon, and night, or oftener; if there be much heat, as it will have more effect. If there be inflammatory matter in the system, a crisis—rash or pimples will probably come out, and so produce a good effect, thus acting as a counter-irritant. When this is the case, and the rash becomes sore, or discharges, simply attend to the crisis treatment as in this book; and should it become hot in the night, re-wet it; morning and evening wash over the parts with warm water and brown soap. This bandage will not produce a crisis or rash in a healthy system; and it is only where there is inflammatory matter in the system, which is always dangerous its remaining in, that any crisis will be produced. It is very useful at all times, in soothing the stomach, bowels, liver, and kidneys; and may be worn by public speakers and ministers, on occasions of much exertion, with great benefit; however much the bandage is worn, no injury will arise. I wear it for weeks together when I have much work to go through; and never have any rash or crisis in consequence. It also tends to allay thirst, and is used in some stone quarries and iron foundries, where the work is hot, for this purpose, and for support to the back. In cases where much medicine has been taken, the stimulating effects of the baths and bandages throw it off in the crisis, upon the non-vital organs, the legs, arms, and surface of the body; and so entirely replace the vitiated tissue by new and healthy formation. Wherever there is disease in the system, there the crisis will show itself, relieving the parts most affected.*

CHEST COMPRESS.—We use different kinds and sizes.—The shorter chest spongio-piline compress, with collar, is invaluable in all chest complaints, and bronchial affections, or of the lungs. The collar is made of two thicknesses of calico, covered with oiled silk, and quilted.



13 in. from E to F, 10 in. from C to D, 14 in. from A to B—full size 6 in. longer, collar 14 in. long, 3 in. wide.

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* See Crisis Treatment, page 435. We now use swan's-down calico and mackintosh jaconet for body bandages, instead of oiled silk and calico.

The spongio should be bound with tape, and have two crossings of tape at the back, to keep it from stretching, and should be worn night and day until the complaint is removed. It will not weaken the chest; but, on the contrary, greatly soothe and bring external warmth and circulation; and so relieve the internal congestion. The collar is wrung out of cold or tepid water, and the spongio sprinkled or sponged with the same, but not to drip, or the compress will feel cold; and re-wetted morning, noon, and night. The 179 compress will be useful at the same time, as the apex of the lungs comes up to the point betwixt the shoulder and neck. The above chest compress we ordinarily use with a body bandage and spinal compress. Sometimes, however, the body bandage cannot be used for want of vital heat, and then we find the full-size spongio chest compress, which is merely six inches longer, to be the best. Either of these chest compresses, or the calico one described below, are excellent preservatives to wear in case of exposure to cold, or on occasions of public speaking, in winter, and may be thrown aside without danger of taking cold. The half chest calico compress is made of a similar shape, but instead of spongio, there is first calico, two thicknesses next the chest, then one thickness of flannel, and outside oiled silk, lined with one thickness of calico to strengthen the silk. Some persons will find the full-size calico compress lighter to wear, and to act on the bowels as well as the chest, if they can keep it warm; but it should be observed, that if *any bandage feel cold, it will do harm, rather than benefit.*

WET PACK FOR THROAT.—Many a valuable life amongst the ministers of the gospel and public speakers would be preserved by the use of this compress, saving them from bronchial disease, or consumption, by occasionally wearing it, and packing the throat at night as follows:—Take a napkin, wring it out of cold water, fold in four lengthways, wrap it round the throat, and two yards of flannel over it, or a pair of lambs' wool drawers or flannel petticoat, if no flannel wrapper at hand; however often this is used, it will not injure or relax the throat. I always take the precaution of sleeping in it after public speaking. I have been instrumental in restoring and preserving many a valuable life by advising this application. It is well known that the majority of earnest ministers of the gospel and other public speakers become invalids, and are obliged to give up their work, from bronchitis and relaxation of the throat and uvula; packing the throat and using the respirator after sermons or lectures, would most effectually save them. I can speak from long personal experience. One point must be noticed, the flannel wrapper should be thick enough to keep a good warmth up; and in the morning sponge or wash the throat well with cold water. In obstinate sore throat or quinsey, keep it on night and day, re-wetting once or twice in the night, and every half hour in the day-time. I have known bad cases cured in twenty-four hours. Spongio-piline* could be used in day-time, being less bulky, but there must be good heat kept up. Bath No. 82, two or three hours, followed by No. 81, six or eight hours, if internal swelling. 220 to throat useful.

SPINAL SLAPPING.—This we find of great use in healthily stimulating the great nervous centres in the spine and brain. In cases of congestion of brain and general nervousness, let the patient sit on a board over the sitz bath either with or without the feet being placed in mustard and water, of 100 deg. heat. The attendant then dips the hands in cold mustard and water and applies it down the spine; gently and quickly slapping with the open hand, one hand following the other from the nape of the neck all the way down the spine; frequently dipping the hand in the mustard and water, the mustard not to be washed off, but the back wiped dry with a towel; the top of the spine should have extra rubbing. The whole operation to last from four to six minutes at a time. (See bath 127.)

WASHING OVER THE BOWELS.—In some obstinate cases of constipation of the bowels we order the bowels to be washed with hot soap and water and a flannel pad at bed-time for a few minutes; then to wipe the soap off, and rub a little glycerine in for five minutes; and after put on a dry flannel two or three thicknesses and sleep in it. This we have found answer when other means have failed, and especially with those far advanced in life or weak; it should be done in bed. One lady, seventy-two years of age, came for liver complaint and long constipation, and who by having this application for some weeks, with slight bathing, got entirely well, and has since enjoyed excellent health. (See also bath list, 78½.)

RESPIRATOR.—This is a most useful invention, and may be used without any risk. It is of the utmost importance to every one going out of a warm room into a cold or damp atmosphere. If put on before leaving the warm room, a temperature of seventy or eighty degrees is breathed, which effectually prevents attacks of bronchitis, inflammation, or sore throat; and in cases of bronchial affections, I recommend its use during the night. I have seen and felt the most important benefit from this, as it is manifest there is risk either of inducing or increasing inflammatory action in the fine air-tubes and vessels of the lungs, by the sudden change of breathing a temperature one moment of seventy degrees, and the next of thirty or forty degrees, and sometimes far lower. Maw and Son's, of Aldersgate-street, London, I have found the best; price 5s. each, or post free for 5s. 4d.

COD LIVER OIL.—This I consider very beneficial where it can be taken to agree with the patient, but the large quantity almost invariably prescribed clogs the liver, and does more harm than good. See bath list, No. 207.

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* Spongio-piline may be bought wholesale of G. Trimley, 41, Queen Street, Cheapside, London; and at most druggists.

SWEATING PROCESSES.—*Spirit Lamp, Vapour Bath, Gas jet, Hot Water Bath,* 90 *to* 104 *deg.;* Dry Blanket Pack, Hot Dripping Sheet, Foment Pack, Body and Towel Pack, Hot Sitz.

See bath list, which gives very full directions on all these matters. Our 98 or 47 or 93, have frequently saved lives in extremity, by producing immediate action on the skin, and by their stimulating effects on the organs of nutrition; and unlike allopathic practice, gives relief and stimulates without any after ill effects.

TONIC PROCESS.—Douche of various powers and length of time; cold dripping sheets, cold sitz, especially running sitz, together with cold spinal rubbings, and cold water poured down the spine, cold shallows and pail douches; towel back wash whilst sitting over sitz.

SLIGHT TONICS.—Cold mustard and water foot and hand baths; cold and tepid head baths; cold wet towel rubbing, tepid shallows with cold pail douche, tepid sitz with the feet in mustard and tepid water; and cold spinal rubbings whilst sitting on a board over sitz, having cold water poured down the spine the while; cold back wash, running sitz 70 deg. for five minutes whilst the feet are in hot water.

The following are very modified applications of the above processes for very delicate patients:—

A very gentle vapour bath for five minutes, then throw a dripping sheet over the body before coming out of the vapour box. Usual sitz 90 deg. for five minutes, soaping the parts out of the water whilst the others are in, having the feet in hot water during the time. Then wipe over all the parts, feet also, with a cold wet cloth; and then rub dry. Chest-rubbing either with cold water, mustard and water, or cod liver oil, from three to five minutes, with the lower parts in tepid mustard and water, is good. Cold running sitz for two minutes without undressing; this bath is invaluable at any time for many female complaints. Soaping the whole frame over with a flannel pad and warm water, and then quickly sponge it off with cold, using very little water. Hot foot and hand bath for five minutes, then wipe them over with a wet cold cloth. Mustard and tepid foot and hand bath for five minutes, simply rubbing them dry and warm afterwards. Wet towel rubbing half and half; first doing the upper half of the body whilst in bed, and drying; then putting on the woollen vest, perform the same operation with the lower half of the body, dipping the towel in tepid water. Fomentation on the chest or bowels, warm, not hot; and then wiping over the parts fomented with a damp towel. Steaming any affected part of the body separately by means of the opening in vapour box; or by pan of hot water with hot bricks in, with the limbs placed on a narrow board over the pan, and a blanket over all. For nervous patients this steaming is very useful, if applied to the nape of neck for a short time, keeping the head well wetted during the process. Rubbing the nape of neck with the hand, and mustard and cold water for five minutes, whilst the feet are in tepid mustard and water, is a very soothing process for nervous patients. Pouring cold water over the nape of the neck for a few minutes is very refreshing and beneficial. Mustard poultices applied to the soles of the feet, the mustard not being permitted to touch the sides of the feet, may be kept on night and day, and though not much felt at the time, yet do much good by drawing down the blood from the head and promoting general circulation. Mustard poultices also applied to nape of neck, between the shoulders, on the windpipe and front of the neck, down the chest, on the pit of the stomach, and also on the region of the liver, are very useful remedies; but in the application of mustard the skin should not be suffered to break. Wet with dry socks when worn all night are very useful in producing healthy circulation. Cod liver oil is very generally useful when taken as before directed.

HOT DRIPPING SHEETS are very useful before the wet pack, in cases where there is low power of reaction. When coming home with wet clothes, or having been wet, and clothes dried on, a hot dripping sheet, followed by a cold dripping sheet, is a very mild and pleasant operation, and would always prevent cold being taken; or a cold dripping sheet alone would often restore the circulation.

FOMENTING PAD IN STEAMER.—In all cases, except of full habit, a flannel fomenting pad, wrung out of hot water, held to the stomach and bowels, whilst having a steamer, is very beneficial and agreeable. In cases of full habit, a towel wrung out of cold water, held to the stomach, is best.

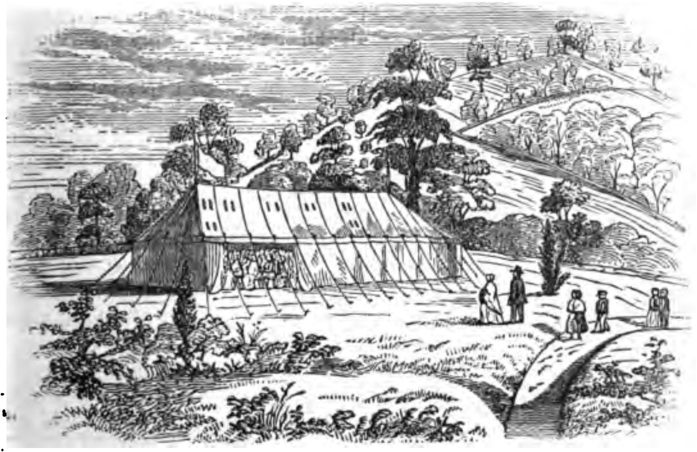
FOMENT PACK.—Having had this year some very bad cases of stagnation of the vital powers, I have tried with great success what we call a fomenting pack, that is, in addition to the directions for wet pack described, wring a flannel fomenting pad out of hot water, and lay it under the shoulder and back, on the blanket, and another hot pad on the front of the body; then wrap up in the wet sheet. Next bring one side of the blanket over and put on the hot fomenting can, then the other side of the blanket and the mackintosh sheet, &c., as in wet pack, followed by same application as after wet pack.

TRUNK PACK AND TOWEL PACK.—Prepare mackintosh sheet and blanket, as in wet pack, and have half sheet or towels to wrap the body in, leaving out the arms, and pack in a similar way. The lower part of the person need not be undressed for this, unless preferred.

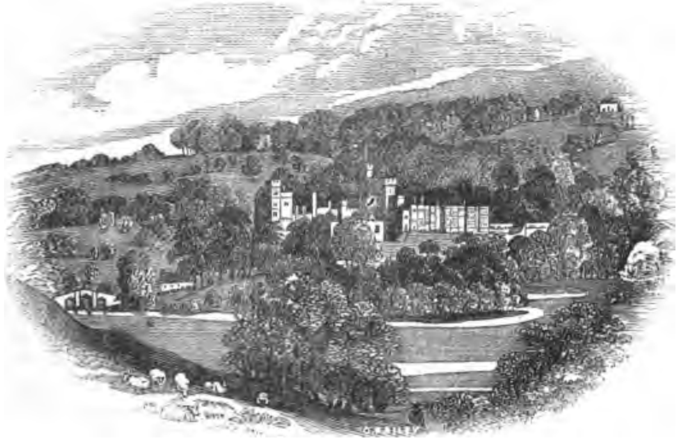
SITZ BATH HOT PAN.—This is a pan twelve inches by fourteen. The bottom three inches deep made water tight, except a hole and plug to fill it with hot water. The sides raised above this three inches. A flannel pad, only one or two thicknesses, laid on dry, for the feet to rest upon when the person is using sitz bath, covering the feet over with a dry flannel, or altogether wrapping the feet in it. This will be better than putting the feet so often into mustard and water.

HOT WATER SITZ.—This, for many cases, is most useful. The cases in which we do not recommend it are piles, heart affection, full habit, determination of blood to the head, or spinal affections. In cases of sudden attack of cold at the chest, or of the lungs, or asthma, stomach complaint, cramp, &c., it is highly useful. Have the water 100 degrees, or more if it can be borne, sit in the bath with the feet out and in hot water, or on a hot pad. Have a fomenting pad dipped in the hot water, spread over the throat, chest, and bowels, and one over the back of the bath to lean the back upon. Keep the arms down in the water by the sides of the body, and throw a blanket over the person, except the head. The hot pad will be found most grateful to the chest and bowels. Remain in ten or fifteen minutes, but not so long if perspiration is excessive; then have a tepid or cold wash, and put on chest compress and body bandage, wetted as usual. The hot sitz will be found a very agreeable and beneficial bath, especially in winter, or in case of a chill or cold, and may be used at bed time, (See 93, 98, or 99, bath list.)

FLANNEL BODY BANDAGES AND CHEST COMPRESSES.—We now adopt, for delicate cases, a flannel end instead of calico to body bandage, the flannel end double. Wring the flannel end out of cold or tepid water thoroughly; unless it is well wrung, it will drip and be uncomfortable. This is a very important improvement; we have been able to get on with cases who could not even bear the calico bandage. Chest compresses, oiled silk, lined with flannel, and the flannel wetted, are very light and comfortable; still calico or spongio will sooner bring out crisis if there is inflammation.



MORNING WORSHIP IN OUR MARQUEE, AT LEA MILLS.



HADDON HALL, THE SEAT OF THE DUKE OF RUTLAND.

DIVISION IV.

APPLICATION OF HYDROPATHY TO DISEASE

CASES.

No. 1.—It was my intention when first I thought of this work, to have given a larger number of cases, but experience in my establishment has convinced me that it will not be advisable to do so. So frequently have patients come to me with Dr. Gully's book, in which a great number of cases are inserted, and the applications described,—and said such a case was just their own—this feeling and that symptom was exactly described,—when in fact their case and the one described really bore no analogy. Except in giving some general idea how some are treated by our applications, I think it would only be liable to mislead patients by giving more particulars of cases. Still I believe these general directions will be serviceable where the cause of disease is easily ascertained. The development of disease varies so much in different sexes and constitutions, that when there is anything more than ordinary derangement of the health, none but practical observers can form a correct opinion of the causes of disease. I have seen much injury done to nervous patients by studying cases, and following the treatment laid down for them in books, without the requisite knowledge derived from practical observation.

OVERWORKING THE BRAIN AND NERVOUS SYSTEM —There is a large class of diseases arising from this cause; and just now, whilst writing, the proprietor and manager of a popular country newspaper is consulting me about his state. He says that last night he got no sleep, his mind was running on a hundred subjects, and he had no control over it. To-day, of course, his nervous system is wearied and excited, with not much probability in the present state of his bodily health of having a better night. He has taken a short trip from home for a change. It will do him some good; and help him to carry on a little longer: meantime the lamp of life is burning doubly rapid, and consuming the frame twenty or thirty years sooner than God intended. On examining the case he informs me he has gone to his office on Friday morning at six o'clock, and stayed till Saturday afternoon, without rest. Now, surely if a man studies the nature of his frame, and the conditions of health, he will see this is a really reckless and destructive course, which no considerations can justify; and which, moreover, I believe to be really a trespass on God's laws and man's responsibility. How can such labour be compatible with the calm consciousness of the high mission God has given man to fulfil? And, besides, even the object which man aims at is lost, for if even wealth and an independency be gained, there is neither power nor life left to enjoy it.

I know it will be said by many, "I have no choice, I have an office in the counting-house, or in the shop, and must go through the work required, or resign my situation; and what can I do?" Alas! that this should be the case from the avarice of employers requiring such overwork from those employed, because others in the same line of business require it, and therefore having an idea that they must do the same to meet them in the market. I know cases, where the clerks and warehousemen, or shopmen, of wealthy professing Christians, who give largely to charities and the building of places of worship, have lost their lives from confinement, bad ventilation, and the every-day pressure on the nervous system, without proper means of complying with nature's laws, assisted by baths and due rest of the brain. I see such assistants drop off from the counting-house or such other places, and other young men step in from the country to be similarly used up. Let employers, and especially those who profess to be Christians, look to their responsibility in these matters. I have at this moment more than one or two in my recollection who have been cut off in the morning of life, leaving young widows with young children to struggle on the journey of life with the thousand difficulties that beset them; but their late husbands' rich employers still use up others, still give money to charities, still live in style with their liveried servants, and give good dinners. To such the Lord says, "Many shall say unto me in that day, Have we not prophesied in thy name, and in thy name cast out devils, and in thy name done many wonderful works? but I will profess unto you I never knew you, depart from me, ye workers of iniquity." I believe the standard by which the Lord judges will be found far different from that used by what is called religious society. He never approved of compounding in religious duties, by giving with one hand what has been wrung out of the bodies of servants by the other. I do not condemn all indiscriminately; for some, I believe, have not had their attention drawn to this important subject, and as I shall have to remark further on, even when the means are at hand, some are too indolent or careless to use them. I leave this to reach those whose minds will, I am sure, convict them, if they do not stifle their consciences, and turn to the customs and opinions of society for justification. Wretched delusion! if they do: for they know well the customs and laws of this world will not be allowed to be put in plea in that higher court, to which we are all hastening.

The first part of this little work shows the constitution of the bodily frame, and its motive powers; and the dependency of the organic part of our frame on the vis vitæ, or power of life for existence, which springs from the healthy state of the higher order of nerves called the spinal cerebral. Lower this power to a certain degree by over-work and improper or insufficient nourishment and rest, and the breath of life, which the Creator has breathed into man, making him a living soul, is expelled from its earthly tenement: the dust returns to its parent earth, and the soul to God who gave it, to give an account of the deeds done in the body. Such is the feeble and transitory nature of the soul's tenancy in the body, that we see apparently from slight and silent and to us unseen causes, the connexion broken, and the tenant turned out with little notice; and how many spirits, from remediable causes, are compelled to dwell in shattered and miserable bodies the remainder of their sojourning in this mortal state. This should not be the case, nor would it be if mankind acted on the Christian principle of serving God, and fulfilling their high and noble mission.

First, teach mankind to know God and their great Mediator; then teach them the nature of the body in all its marvellous structure. Let them be impressed with the fact, not merely an idea, but the solemn and undeniable fact, that they are responsible for the use they make of their frame, and of the faculties it possesses, and which alone can be kept in a fit state to perform the grand mission it is charged with, by obeying the conditions of health. If employers did this, they would not themselves be using up this precious body for money or transitory and worthless honours; they would not require of their assistants to use up their noble faculties in their service, until they are become so benumbed that they have often to perform their services more like machines than spiritual beings.

I write this, from dear-bought experience, to show the necessity of attending to the bodily machine, if any comfort is to be enjoyed in its existence. For the mind, however highly endowed, is dependent for a deal of its happiness on the state of the corporeal part. For many years I worked fourteen to sixteen hours a-day, and often the night too; taking no precautions in the way of baths, and I never knew a day's health for twenty years. Now, however, by attention to diet and baths, I can go through as much labour with perfect ease and excellent health. I never have a holiday: my thousand workpeople, free hospitals, hydropathic establishment, writing tracts, and Sabbath lecturing, &c., forbid it; nevertheless I know real enjoyment, with quiet nerves, and a mind without any corroding care. I believe God's word—that all who serve him sincerely are his children, and that he will keep them from all evil and in perfect peace. The corroding care I leave to my Master, according to his command.

Having said this much, I will now endeavour to point out some remedies for preventing the distressing state of disordered nerves and functions of the body

If employers and assistants would be at the trouble to use a very simple plan of bathing, they would be amply repaid. First, employers should find the means, by appropriating a room or chamber for the purpose, with a few sitz baths, one or two shallow baths, a steamer, some sponges, and sheets. This book will show what is necessary for hydropathic baths (the expense of which is trifling), and I will gladly furnish the articles at cost price. I will also send an experienced bath-man, or attend myself, if possible, to give instructions in their use, if needed. Ten or fifteen minutes, or even less, would suffice for most of the baths. The body refreshed would soon repay the expense incurred, by rendering the individuals so much more capable of performing their duties with efficiency. I have been so convinced of its good policy, both as a duty and as profitable in a pecuniary point of view, that I have provided my workpeople with baths, and also a cooking-house and servants, who prepare their meals, and I supply Scotch oatmeal porridge with golden syrup or milk for fivepence per week; I also supply a pint of tea or coffee with sugar and milk at one halfpenny per pint, or they can make their own. I give my factory hands an additional half-hour each morning for religious worship, and for hearing any important events going on in the world. We all assemble (those on the premises number about 350) in a room in the winter, and in a marquee during the summer, from half-past eight to nine. The mind and body is refreshed,—time is given for reflection that we are made for nobler purposes than merely working for the support of the body; and that there is a state approaching in which there are no factories, no avaricious or unfeeling masters, nor any thoughtless or indifferent to the welfare of those around them, and where the factory hand may be found amongst the highest: for the apostle James says, "Hath not God chosen the poor of this world rich in faith, and heirs of the kingdom which he hath promised to them that love him?" Many a labourer or factory hand is now here numbered amongst the redeemed, and they shall shortly be translated to where the weary will not only find rest, but inconceivable happiness and for ever. "Be patient therefore, brethren, in well doing, unto the coming of the Lord. Behold, the husbandman waiteth for the precious fruit of the earth, and hath long patience for it; until he receive the early and latter rain. Be ye also patient; stablish your hearts; for the coming of the Lord draweth nigh;" and thank God, that all may come who will come and drink of the water of life freely.

Our daily summer morning services in the marquee amongst the beautiful scenery and surrounding woods will never be forgotten by those who have attended them, and long will they remember the glad chorus of the birds, warbling their morning songs in harmony with our own.

I believe most of our lives have been prolonged and made happier by these services. Even now the recollection of them in years gone by dwells on the mind with pleasure, and I hope we shall always continue them while we stay on earth. Every now and then one of our number departs from these earthly scenes, to those blessed regions we read so much of; and their happy spirits, I often think, may be present with us. The greater efficiency of the workpeople, by these relaxations, is beyond all doubt, and a feeling of family compact is produced, which greatly lessens the trials of labour.

On the score even of pecuniary profit I can recommend employers to give their assistants opportunity for these exercises; it would have, I am sure, an important effect on their characters and habits. Their over-wrought, wearied, and feverish frames want rest and enjoyment; and they too frequently seek relief in practices that aggravate the evil effects of fatigue they have undergone. The contrast with the baths, &c. as prescribed in this work, would soon be evidenced in the vivacity and cheerfulness of the workpeople. The system being in proper order, the blood would be well circulated, the hot skin relieved, the functionary action of the viscera kept up to a healthy standard, and increased powers of usefulness, with a good will to use them, would be the result; and further, the employer would first have the great satisfaction that he was acting as a steward ought to do towards those over whom God has given him charge; and secondly, he would find it the best policy to have his assistants as full of life as possible to aid him in his enterprises.

I have stated before, what plan I use; I however repeat that the simplest plan of baths where there is not much accommodation, is to have some water in a sitz in the bed-room overnight, on rising spread a mackintosh sheet on the floor to save slops; sit five minutes in the bath with legs out, with a blanket thrown entirely over the body, then have a cold dripping sheet, or washing sitz, or cold sponge; the dripping sheet alone is best for winter, and at all times least trouble, and generally most efficacious, and dry with a sheet, not with towels, as the body is too much exposed, and animal heat lost; if time, soap over with common yellow soap, and a small flannel pad; or a hot dripping sheet followed by a cold dripping sheet, or a five minutes vapour and cold dripping sheet or cold shallow, is very refreshing A vapour followed by a cold dripping sheet or cold shallow may be taken with much benefit at eight or nine o'clock in the evening; a sitz bath five to ten minutes, 70 deg. in winter and cold in summer, before getting into bed, with the feet in hot water or without hot water, often relieves the head and gives sleep; but if suppers, tobacco, and alcoholic drinks, pastry, &c., are not totally discarded, no person can be in a safe state of health.

The use of the wet body bandage I resort to a good deal whenever I have any extra work or over-fatigue, I throw it off without any substitute, never taking cold by so doing, and however much it is worn, it will do no harm; this wet body bandage and sitz bath are my sheet anchor, when hard pressed with mental work, and does wonders without any possibility of harm: occasionally I wear the wet bandage through the night, in case of indigestion or cold, and a flannel wrapper over it.

HYDROPATHIC PRACTICE.—Hydropathic practice is too much understood and practised as a system of cold treatment; drinking large quantities of cold water, with all the hitherto strange methods of applying it in douches, wet sheets, and various modes, by which the body is not renovated and strengthened, but the vitality washed out of it. The "cold water cure," I repeat, as it has been and is now often practised, is an outrage on the true principles of hydropathy, by which the body is kept in health and life; and the exhibition of this ignorance by many Hydropathic Practitioners sets such of the medical profession as are unacquainted with the system very justly against it. They correctly judge that the application of merely cold water to the majority of the cases of their patients would only increase congestion in the parts, and thereby lower the power of the viscera to perform their functions. They hear of some absurd applications of cold water to attempt to rouse power where there is low vitality; and they judge, if a hydropathic practitioner will commit one blunder against all scientific and correct knowledge of the nature and functions of the human body, that he makes others; and so they condemn hydropathy and hydropathic doctors *in toto.*

Hydropathic practice is of recent introduction into this country, and in Germany too, where Priesnitz first accidentally came into note. Priesnitz was a peasant, and had no scientific education, and, what was a greater defect in him, he despised such education; and the result of this was that, with powerful means of restoration in his hands, which he used by trying their effects in cases without any sound reasons why such applications should succeed, he committed many errors. He tried the practice in some cases and succeeded; he tried the same in others, which not only did *not* succeed, but did injury or destroyed life. Priesnitz's was a system of experiments without a correct knowledge of the symptoms and causes of disease, or of the varieties of constitutional peculiarities. This is unjustifiable, for if a practitioner does not act upon principles deduced from a knowledge of the nature and action of the constituents of the human frame, he is a mere charlatan, attempting to cure disease. I never give a bath without duly considering the various organs or parts in the disease implicated; never as an experiment.

Hydropathic practice has been taken up by some who could not succeed in their medical profession; and who, consequently, were not the best men to bring a good stock of scientific knowledge of physiology and anatomy to bear upon the subject. Others, again, who have undoubted physiological acquirements of the first order, and are convinced of its efficacy, are overwhelmed with their practice; and it is utterly impossible, with their present plans of practice, to carry out the minute detail of the water cure as much as is required. The same care and judgment is as necessary in applying water as in compounding medicine, and understanding and watching, as a good physician does, the complications and phases of disease. Large establishments, where the charges are such as will afford to pay for scientifically educated assistants, should have such in proportion to the number of patients, and also sufficient apparatus and bath-men in proportion. In a hydropathic establishment, where the practice is properly carried on, there are so many manual operations that in reality it very much resembles in its processes a manufactory, with the proprietor, overlookers, and workmen. Moreover, to carry hydropathic practice out with success, it should be in a properly arranged and well-conducted establishment, and also be confined to the establishment. Rooms for workpeople, with their stock of flannel, spongio, calico, oil silk, tapes, ribbons, and patterns, for compresses, bandages, &c. Likewise tin, zinc, &c., for baths, &c., where articles can be made or altered on the spot, are almost as essential as bath-rooms and baths. Then "*the feeding the animals*"—as a physician, alluding to the patients, remarked to me, he could not condescend to do—is in this system as necessary as directing the baths. The clothing, also, is of the utmost importance to see to. I find delicate, cold-blooded patients, with cold feet and hands, come with their fashionable, thin clothing, and light cotton stockings on, in cold weather. *No treatment can succeed unless all these points are attended to.* Hydropathic therapeutics, scientifically speaking, or, in plain English, the hydropathic mode and principles of cure, are put before the public as a sound, hygienic, nature-restoring system of curing disease, and bringing the body into its normal or primitive state. Its professors discard all attempts to bring the body into its proper state by the forcing or deadening system of drugs, blistering, setons, bleeding, and the thousand other forms of doctoring, by which mankind have been tortured and slaughtered for generations. There certainly is no lack of minute and elaborate methods employed in ordinary medical practice as to these matters, but often a total disregard to diet, clothing, and habits. Now, if the hydropathic physician stands upon the punctilios of his profession, and declines, as one who offered to join me did, to have anything to do with the unprofessional and common employment of seeing personally to the application of his remedies, in the shape of baths, bandages, food, clothing, and habits of life, it is impossible he can do justice to his patients; and until hydropathic practice is studied in the bath-house, and looked upon by the practitioner as an office requiring the most particular and personal attention to the manual processes, or as a superintendent over his assistants, he will not bring the system, in its wonderful health-restoring principles, in its true light before the public. The practice of giving baths at private lodging, by bath-attendants going their rounds from one house to another, and the doctor only seeing the patients perhaps once a-week, is utterly unlikely to give a patient a fair opportunity of cure. They cannot have proper bath apparatus, nor the attendance they ought to have. In the simple matter of giving a dripping sheet, the patient is often made to stand in the cold water in the bath, while it is given, to save trouble and slops on the floor; this is bad; or the sheet is partially wrung out, which makes it less effective. A bath may not have suited the patient,—there is no bath-attendant to refer to, nor the requisite quantity of water. I should not dare to prescribe baths under such circumstances, except to those who merely require home treatment. I saw a case in point when on a visit to an establishment a short time since I was consulted by a friend, whose sister, a delicate lady about twenty-one, with but little blood in her body, had been ordered to have a wet pack daily at her lodgings. They had to rub her for hours after the pack, to get circulation; and from the time of having the cold wet pack one day, to the one next day, she was never warm; yet the patient and attendant thought it must be persisted in, as it had been prescribed. This was highly dangerous in this case. The attendant had no machine even to wring out the cold wet linen sheet, and the doctor was only to be seen once or twice a-week, and the week I was there he did not see the patient once. When he did see her, he ordered the pack only every other day; the same effects were produced, and packing was stopped. The lady remained there three months, at a heavy expense, and returned home rather worse than better. No wonder her medical man at home denounced such imposition and ignorance in attempting to cure disease. The husband of a lady has since come from near London to consult me on his wife's case: she, too, has been at the "*cold water cure.*" It is a case of severe chronic rheumatism, making her a cripple. Nothing but cold water has been applied for ten weeks, at an expense of £40, and she is worse, and no wonder. Whenever one of my patients does not become warm in a pack, or after a cold sheet or any cold bath, does not get reaction, a vapour bath is given, or hot and cold dripping sheets, and packing stopped until there is more power. It is not safe to leave a patient in pack without an attendant near. My packing, except in especial cases, which are always properly attended, is done in the bath-house, where attendants are always by, and is so contrived that it is quite private. My patients can converse while they are in pack, and nervous feelings are prevented. To many it is a very formidable operation to be bound up fast in sheets without power to extricate themselves; and great danger may result to nervous persons by being left alone.

It is really doing the public injustice in serious cases by undertaking them at lodgings, or where they cannot have experienced bath-attendants to resort to any hour, day or night. I am very cautious in giving first packs in delicate cases, and in all I have the wet sheets wrung out by a proper machine, and I use coarse cotton sheets, not linen; and wrap the legs, to the knees, in a dry blanket, with a mackintosh sheet underneath for packing, and a chest-can with hot water, as described. Where there are a large number of patients, the proprietor or conductor should have well-paid and properly educated assistants in proportion to the number. The whole bathing processes should go on under one roof, and this would easily and with little expense be done on the plan of my establishment. In one of my bath-rooms—95 feet long by 21 wide—we give over two hundred baths per day, including packs, fomentations, shallows, washing sitz, and the various other processes. It is warmed by steam and hot-water pipes, and there is not the least effluvia in the room, from its being well ventilated. The floor is tiled, with wood grates, so as to be dry for walking upon with the bare feet, and, by allowing the water to run off, can be perfectly cleansed. The packing beds are emptied occasionally, and the contents renewed. Thus the effluvia from the person, which would be retained in the bed, is removed; and the blankets and sheets should be well washed frequently. Persons should never sleep in the same beds that wet packing has been performed in.

I make no pretensions to the knowledge of physicians who have gone through the dissecting-room and the usual laborious curriculum of medical training; but I can successfully compete with them in curing, and that on sound and certain principles, as the state of my establishment and the testimony of numbers who have before tried hydropathy in vain for cure testify. Few physicians will condescend to attend to the minutiæ I name as absolutely requisite for carrying out this practice as it ought to be with justice to the patients. I have been trained to business habits in my manufactory; I have to see personally into the minutiæ of every operation, acting on known principles; and I do not consider for a moment it would be compromising my position as a master, by even seeing to the state of the floors, the dirt and grease, and the ventilation of my factory, for I know I could not long keep the lead in my branch of business, were I not to see to these matters of detail, as well as talking with my bankers and wool-merchants as to the prospects of the money and wool markets. Far from despising scientific knowledge, I have considered it to be my duty to read and study physiological works every hour I could spare for a long period, and also to keep up with new works published on the nature of disease, &c.

I hope to see hydropathic practitioners with high physiological and anatomical knowledge content with some thousands per annum, and spending the surplus above in engaging young surgeons and physicians to help them, in proportion to the number of patients. Let them then, with their assistants, hold a cabinet council every other day, and compare notes, and in any critical cases every day. This plan would soon put hydropathy in the place it ought to occupy in the estimation of the public.

RHEUMATISM.—This is a universal complaint, I cannot call it disease, but a disorder of the nutritive or organic system. By some it is considered to rest merely in the blood. Others, and I think with more correctness, believe the cause of pain, inflammation, and swelling, is owing to the sheaths of the muscles and the sheaths of the nerves wanting the required serum, derived from the blood, which is necessary to lubricate the sheaths of the muscles and nerves, allowing them to move easily and freely in these sheaths. Thus any mode of living, or habits of life, or any means by which the blood is impoverished, prevents the supply of this necessary serum to the sheaths, (as this serum can only be formed from the blood,) and the muscles and nerves consequently move in comparatively or altogether dry sheaths; which soon produces pain and inflammation: and eventually, if not relieved, destroys the vitality of the sheaths altogether, and sets the limbs fast. In all my practice in rheumatism, I have acted on the principle of improving the blood, and have good reason to believe it a rational one, from the cures I have seen by treating it as only a disorder arising from impoverished blood and lowered vitality. I apply steam, calico and spongio bandages, and hot and cold baths, both large and small douches to the parts affected, but not with any expectation of curing unless, at the same time, I can get the tongue clean, and the stomach and bowels in good order, by the means I elsewhere prescribe. Rheumatism will never be cured while the tongue is red or furred, showing chronic inflammatory action in the mucous membrane lining the stomach, liver, and bowels.

In rheumatism, the first essential point to attend to is the state of the stomach; and to begin a strict system of dieting, discarding tobacco in any form, for this is the primary cause of the crippled state of thousands by the double power for mischief it contains in poisoning the blood, and lowering the vitality of the nervous system by its narcotic power; then all ale, porter, wine, or spirits, which only increase the inflammatory action already so troublesome; next, taking but little or no flesh meat until the tongue is in a nearly natural state: all condiments are bad in these cases, as pepper, mustard, or acids. The simple diet recommended in this book, with the hot soaping and hot and cold dripping sheets. fomenting pack, or usual wet pack, each followed by tepid dripping sheet, or tepid shallow, and not by quite cold applications; spirit lamp, followed by tepid dripping sheet; Hot water sitz bath. Pad before and behind, and feet in hot water, followed by tepid sponge over, or tepid dripping sheet.

The application of cold water to any rheumatic part will only increase the inflammation; cold water should not be applied until pain is gone, and then may be used to strengthen; wear the wet body bandage night and day, taking care it is made warm by adding a flannel wrapper.

For rheumatic fever, fomenting packs and common wet pack, steam bath, and tepid sheet, and once a day a hot and tepid dripping sheet, a spirit lamp and tepid sheet twice a week, a hot washing and soaping sitz, or hot sitz, with flannel pad before and behind, and feet in hot mustard, fifteen minutes; wet body bandage, with flannel wrapper over, night and day, the calico end of the bandage wrung out of tepid water every two hours and well washed; hot mustard foot and hand bath ten minutes. These are the applications we use; they must be regulated by the strength of the patient, and the severity of the attack: free perspiration must be produced; and if it is difficult, let the patient be put in hot shallow ten minutes, and then have spirit lamp. The apparent lowness of the patient produced by these sweating processes must not alarm. I have never known a case die, or be injured, or not entirely recover. If stimulants or flesh meat are given to keep up strength, the fever will inevitably return. Sleep in cotton socks wrung out of tepid water, and lamb's wool over. Bandage any parts affected with wet strips of calico, well wrung out, with mackintosh and flannel over to keep in the heat. Spongio piline will keep warm when calico will not. The more the limbs are exercised while there is any rheumatism, the worse they will become: the muscles and nerves wanting vitality, and working in comparatively or altogether dry sheaths, gives great pain.

From the theory I take for the most correct one, as to the cause of rheumatism, it will be very evident that blistering, which weakens the system, and heating lotions, which increase inflammation, but neither of which applications improve the quality of the blood, must be injurious; and they will be found, in every case, to be so. I have had scores of cases which have been seriously injured by these applications, and by them some have been made cripples for life.

RHEUMATIC FEVER.—This spring (1858) I was in Derby, and was requested to see a man in bed with rheumatic fever, age 28. I found the man entirely prostrated, unable to rise out of bed, joints swollen, and in great pain. The attack had been brought on by cold, indigestion, and overwork.

His doctor had given him strong aperients, in hopes of expelling the disorder, but this caused diarrhœa and increased inflammatory action of the mucous membrane in the stomach and bowels, and so lowering the vitality of the whole frame, that the strong medicine given to cause perspiration was entirely ineffectual. In this helpless, miserable state, I had the man wrapped in blankets, and removed by train to my free hospital, Lea Mills, suffering acutely during the journey. Soon as he arrived he was put to bed, and had a little tea and bread and butter, and in half an hour a fomenting pack for one hour, followed by a hot soap over and tepid sponging. This comforting, stimulating, yet soothing process gave immediate relief from pain, and produced free perspiration, which the doctor's utmost efforts for the previous fortnight had failed to accomplish; a half chest spongio compress and a wet calico body bandage, with flannel wrapper over, were applied; then the legs and arms bandaged with wet calico strips and flannel, &c., as No. 214 on list, and mustard plasters to feet, as No. 153; the man slept, and in the morning was greatly relieved. He had then hot soap over, and tepid sponge over, and rewetted and replaced the bandages; forenoon, another fomenting pack, No. 47, for three-quarters of an hour, and tepid sponge over; afternoon, sponge over and replace bandages; eight o'clock, hot mustard leg bath and wipe over with sponge squeezed out of tepid, and replace bandages. Next day same, only omitting foment pack, as perspiration was freely at work night and day for several days. Treatment after, light and gradually colder, until he could stand and have hot and cold dripping sheets and sitz baths and spinal rubbing, 65 degrees, then cold, and cold shallows and douche. In three weeks the man was thoroughly well, and fourteen pounds heavier than when he came, and has since experienced no return of his pains; the swollen joints soon got to their natural state. This patient had no stimulants, and no medicine of any kind, and no flesh meat the first week.

The gross ignorance of the nature and constitution of the human frame, shown in first "opening" the man's bowels, is marvellous: medical men are, however, brought up with certain fixed rules for expelling disease, which rules were made into law long before the discoveries of the nature and function of the nutritive nervous system, and no facts showing the desperate mischief and even ruin to the constitution by following those rules will stop such practice. "*Clearing the bowels,*" just as they would clear a sewer, without the slightest regard to the difference betwixt living tubes lined with mucous membrane, nerves, delicate absorbents, and minute blood-vessels, and clay pipes; this method is still the law. "*Making the bowels act,*" whether nature requires evacuation or not,—something must be forced out; and so it is often, and indeed always, with purgatives, that the delicate mucous lining of the bowels is more or less forced out with the contents. The mischief purgative medicine causes will be very soon apparent, when it is seen that the mucous membrane lining of the bowels protects the thousands of absorbents which take up the nutriment out of the digested food passing through them. "*Clearing the bowels*" stops these absorbents in their legitimate office, and forces them to absorb the purgative medicine, instead of the proper aliment for the blood; the doctor's physic is carried into the whole circulation, and besides scouring the bowels, produces inflammatory action of the mucous membrane, and mischief the doctor cannot follow in other parts of the body. The difference betwixt comforting the body by our harmless applications drawing away the poison pent up by the dry skin, and that of lowering and punishing the delicate internal structure, was strikingly shown in this case. Yet the same doctor goes on with the same practice, and I have at this moment two free hospital patients from under the same doctor's hands getting well, and for which cases he could do nothing. I could give a good number of cases of rheumatic fever cured by our applications; in no case have we failed to cure, and in a short time; and, above all, the disorder is thoroughly expelled from the frame, and so saving the patient from heart affection, which is very commonly the consequence of rheumatic fever; and if the patient under allopathic treatment escapes this, he is always left with aches and pains more or less, and weakness in some part, which is never cured by medicine.

ANOTHER CASE OF RHEUMATIC FEVER.—A case of rheumatic fever was cured by the following treatment. On rising, a fomenting pack followed by a dripping sheet or shallow bath, at first not quite cold, say 65 degrees, forenoon, a vapour bath for ten minutes, and a dripping sheet after nearly cold; three o'clock a wet pack for one hour, followed by dripping sheet as above. The fever generally returns about night, and if this be the case, give another wet pack of half an hour from seven to eight o'clock. Wet a napkin in cold water, and wear it round the head night and day, frequently renewed in cold water. Shallow baths are better than dripping sheets, where they can be had, rubbing the body well while in the bath. Wear a wet body bandage night and day; diet as in former case, omitting flesh-meat if the fever be high. No stimulant of any kind nor medicine to be taken. We have never found this treatment fail in soon effecting a cure, repeated daily until the fever is subdued, and then fewer baths are needed.

I have had cases removed to my free hospital in a cart, in the middle of winter, on straw, with a blanket or two to cover them, and in three weeks have sent them home entirely restored to health. We consider such cases the most simple and speedily cured of any we have; allopathic doctors find them the most difficult of any of their cases, and never thoroughly cure them. I have recently had several severe cases of sciatica, and been very successful with them. If the patient is young, two or three months, and sometimes a shorter period, is sufficient for cure; but if in middle life or older, the complaint is not so soon removed, yet even in these cases we succeed. Nature must, however, have time to act, as there is never sciatica without derangement of the digestive organs, and often of long standing.

The following is the prescription I gave in one of these cases; the general health must be the main point to attend to, and the complaint secondary, and only to comfort and soothe, and gently stimulate the limb:—On rising first morning, Nos. 13 and 28; second morning, No. 2; third, No. 30. First forenoon, No. 55; second, No. 64; third, No. 46; fourth, No. 61. Afternoon, first day, No. 141; second, No. 143; third, No. 142; fourth, No. 143. 195, 165, 208, moderating the baths according to the age and strength of the patient. When crisis or rash comes out on the affected limb, then keep cold water off the part, Nos. 148, 146, 35. The more severe the crisis is, the more the body will be purified, and the irritating matter taken out. Sciatica is a formidable complaint, and incurable by medicine; thousands are cripples for life by it, and six or even twelve months are well spent in the cure, rather than go halting and suffering the remainder of existence; very often the inflammation of the sciatic nerve so affects the muscles and ligaments of the hip-joint, that dislocation takes place, and then restoration is impossible by any means. The intimate connexion of the sciatic nerve with the spinal marrow is the reason of the inflammation of this nerve being of so much more consequence than other nerves more distant from the nervous centres.

CASE OF SCIATICA.—A gentleman engaged in farming, and fond of field sports, had, from indigestion and often keeping his wet clothes on, an attack of sciatica, or inflammation of the sciatic nerve, which, as seen in the engraving, takes its rise in the hip and runs down the back of the leg to the heel. The attack was sudden and severe, causing intense pain, and almost incapacitating him from walking. The doctor was sent for; he applied the routine practice, which, as I have shown, is not a jot improved upon in principle since the case I name of the Earl of Derby, in A.D. 1594; and notwithstanding the wonderful discoveries of the nature and action of the human frame, it is still war to the knife with the poor body, and a war in which many times more than were destroyed in the Crimean war are killed, wounded, and missing every year. After giving calomel internally, and heating lotions externally, for a few weeks, the patient not getting better (as there was not the least probability would be the case with such barbarous, ignorant plans), both patient and doctor were brought to a stand to know what course to take next. The gentleman was only twenty-six years of age, and it was sad to see the prospect of being crippled for life, as the doctor well knew would be the case unless more life could be got into the limb, and so he said to the patient, "We must take some stronger measures, and try blistering," which the patient was very unwilling to submit to: however, his surgeon told him that it was his only resource. Now mark, the faculty proclaim that the life of the body consists in this vis vitæ, or power of life in the nervous system, or the nerves of nutrition, and, as Dr. Hooper says, whatever lowers this, lowers the vitality of every organ. But in this case, as in all their practice, they make no scruple in setting this doctrine at defiance. The surgeon laid a powerful blister on the leg, and soon as it rose all use was gone out of the limb, and the patient could not move it an inch! The first blister not "succeeding," the surgeon wished to try another, but the patient refused to submit, and well for him that he did, for in all probability had he tried another, the life would have been effectually expelled from the part. A few weeks after this he heard of my Establishment, wrote to me, and I advised him to come immediately. I told him he would have to wait while we got nutrition into the limb, before he could use it. For six weeks we were attending to improving his general health by our comforting baths, by withdrawing all stimulants, and allowing little or no flesh meat. He had been prescribed "good living" and bitter ale; we thought he had too much, or quite enough, inflammatory action in his blood, and accordingly prescribed good "living" in the form of our nourishing food, and water to drink, which gives real nutrition. At the end of six weeks his bodily health had greatly improved, and he had gained weight; but the pain in his leg was almost as severe as before, and he was unable at all times to leave the sofa. He said, "You have done your best, you have been very kind, but I must give it up as a hopeless case." I told him I yet had not the least doubt of his perfect recovery, and begged of him to have as much patience with our system as he had with the doctors, and especially when we had proved to him that his frame was recovering. I said, if you leave now and give up the treatment, you will be a cripple for life. He stayed a fortnight longer, when symptoms of crisis began in the limb, and then I knew relief was speedily at hand. He returned home, as his business required him; but he promised me he would employ one of his servants to give him the treatment I prescribed, and persevere in the same course as far as he could. He did so, and very shortly was entirely cured, and has ever since (now two years ago) been quite sound, and his general health established. He has escaped being a cripple, and, moreover, has got important knowledge for life.

SCIATICA, or rheumatism in the sciatic nerve, which takes its rise in the hip, and runs down the back of the thigh and leg to the foot.* Great numbers are cripples from this cause, and not a few have been made so by the unnatural methods used by surgeons for their cure. Nothing but restoring the nutritive powers by baths and packing can ever restore life and power to the limb; and blistering, lotions, or scarifying only aggravate the disease and increase the inflammation; and not unfrequently causes thickening of the cartilage in the thigh joint, and thrusts the bone out of the cup, putting the limb what is called, out of joint,—never to be got in again.

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* See engraving, page 417.

SCIATICA, AND SCIATICA LEG CASES.—These cases are very necessary in severe or chronic sciatica, and of use in all. The severe pain striking downwards from the hip to the knee or ankle is only to be removed by renewed vitality and warmth to the part; and as it is impossible to bandage the part as in other cases of rheumatic affection, we have adopted cases made like the two halves of a pair of drawers, but separate, and to tie round the waist, the case to come down nearly to the ankle, using only to the leg affected, if not both affected. To be made of thin macintosh or oiled silk, lined with flannel, quilted, and made to fit round the hip, and to the leg, the flannel slightly damped, but not wet: the object is to produce a moist warmth, but it must be warm. Another very superior, but more expensive, is waterproofed swansdown calico alone. If the leg case does not produce warmth, put on some flannel strips round the leg under the case, and if any one part is very painful, spongio piline damped on the spot under the case, or fastened to the case inside. All wrappings must be made to fit, to prevent the air getting to the part, as constant warmth is necessary for cure. Vary the applications as Bath List 153¼, 214, 220. As to general treatment and diet, see Index. There is always great want of vitality before sciatica comes on, and in the course of the ailment abstinence from stimulants, tobacco, coffee, is requisite. Diet, 210. Baths most used, 70, 52, 59, 47, once or twice a week; 89 using suds and sitting in as long as comfortable; wrapping leg up same time in warm pads, 141, 143, 140, 186, 163, with 172 or 169. The less exercise the better, till all pain is gone. The foot of the leg affected is generally cold, showing want of circulation, and must be kept warm by 153, 153½, 195, and hot mustard foot-baths. After any treatment, a good deal of gentle dry rubbing with hand, using also dry mustard, chillies, or glycerine, or dry hand alone. Friction must never cause pain. After pain is subdued, continue wrappings on for a considerable time: if crisis comes on, use crisis treatment. (See Index.)

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CASE OF SCIATICA AND RHEUMATIC FEVER.—A labourer, about twenty-six years of age, of sound constitution, from exposure to hardships, and keeping on his wet clothes, was attacked with sciatica in the right hip. He applied to a surgeon, who not only gave him advice and medicine free, but gave him money for food; and doctors do such kindnesses more frequently than the public know of. The tongue showing a bad state of the stomach and liver, and the bowels being constipated, alterative medicines were given, and good diet prescribed. This plan, however, only aggravated the evil, as purging the bowels gave no nutrition. The man leaving off medicine, and the summer weather coming on, got better, but not well. He went to harvest work, got soaked with rain one day, slept in a barn at night, and next morning found himself too stiff to work at all, and with excruciating pains in his limbs, he was removed home to a town a few miles off. The doctor was now employed by the parish, and pronounced it rheumatic fever. Physic alone was the only remedy attempted, except a pint of porter per day, with flesh meat, which was, of course, adding fuel to the fire of inflammatory action, already so intensely burning through the poor fellow's muscles and joints. Morphia was given to ease him and give sleep. He was told to keep his bowels open by the medicine prescribed, if they did not move freely every day. Such treatment, being diametrically opposed to the fundamental principles of the life and health of the body, soon set the doctor fast to know what course next to adopt. He recommended him to the County Infirmary, and a nobleman gave him an in-patient's admission ticket. Here the man was put to bed, and kept there during three weeks. He was freely purged with medicine, sometimes the bowels operating two or three times a day for the first month. A hot water bath was ordered twice a week; the man had one, but was so prostrated with it that he told them he should die if he had another, as he could not now stand at all unsupported, so this was given up. After he came out of the hot bath, he was wrapped in blankets, and put to bed, and the perspiration was so profuse that the man said a can-full of water might have been emptied into the bed. Doctors have, it seems, yet to learn how Hippocrates, the great founder of their order, many hundred years since, stopped excessive perspiration, when enough had been produced, by washing the body in cold water. Had one of our tepid shallow baths, or tepid dripping sheets, been given after the hot bath, the man would have reaped great benefit, instead of the injury he received by such excessive sweating in so weakened a frame. Chronic inflammation commenced in the eyes, and so severe was it in one, that the doctor said he feared it would result in the loss of sight. This was entirely caused by the weakness of the frame. The object in allopathic treatment really appears to be to get all the life out by sweating and purgatives, under the idea of purifying the system, but the body dissolves under such cleansing. An M.D. and the house surgeon assiduously attended the man. The physician told the man that unless he got better soon, he must, according to the rules of the institution, discharge him as incurable. The man replied he could not help it, and must submit. One more plan was tried by way of rousing worn-out nature, and drawing inflammations out, and that was a large blister right across the bottom of his back; it rose well, discharged well, but, as in the Earl of Derby's case 200 years ago (Page 227), still, mysteriously to the doctor, it did no good, nor was it likely to do.

Now let it be remarked, that all this is the usual routine treatment for such cases, rich or poor; for the man had been under two eminent surgeons for months before he went to the Infirmary, and at the Infirmary he had attention and advice equal to any in the land, by surgeons and physicians too, and the best diet, warm rooms, and hourly attention; in fact, such that is not to be had at the ordinary homes even of those who can afford to pay physicians. The case was a failure, given up as hopeless. Not one plan had been tried in accordance with nature's laws of nutrition; all had been forcing her to act; attempting by compulsion to eject the inflammatory action, without regarding nature's complaint of the gross usage administered to the wonderfully delicate complicated structure of the body.

The man was advised by one of the surgeons to get to my free hospital. He applied; I happened to have a vacancy, and he was at once removed from the Infirmary bed to my hospital, with difficulty and much suffering; a perfect skeleton, and in intense pain. We began by appealing to the stomach and bowels with hot fomentation; then washed the body over with hot soap and water; then gave a tepid wash, drying with a sheet, and put on a wet body bandage and spinal compress; then packed the limbs in strips of wet calico, with dry over, then covering up with mackintosh and flannel. In twenty-four hours the man felt considerable relief; his natural feelings told him he had got on a new and more comfortable track. Soon he slept well, without narcotics, which had been given freely before; and thus, after three weeks' treatment, he was free from pain; the severe inflammation in the eyes soon getting well, as the tone of the stomach improved; and at the end of that time he walked to and from the hospital, up and down a high flight of steps, alone, to join our morning service; his appetite became good, and the bowels acting naturally, and only requiring time to become a strong man again. He gained weight and strength every day. He had not a grain of physic, nor a drop of mixture, except what our cook made in the shape of porridge, pudding, &c., and only water and milk, and weak black tea to drink. I could point to scores of such cases, now well, and some of them the servants of wealthy people, who, nevertheless, decline to countenance hydropathic practice. The very great gratification, however, in being instrumental in the restoration of our fellow-creatures to health, and imparting spiritual consolation at the same time, fully repays us for any worldly sacrifices: the possession of millions of money could not be put in comparison with it.

Directions for chronic rheumatism, or where the joints are set fast, and yet there is no pain or inflammation.—Keep spongio piline on the parts affected, damped with tepid water; or if this cannot be procured, wrap the joints up in new flannel, and three or four times a day remove this, and have the parts rubbed with cold water and the hand for three minutes at a time; and where the skin can bear it, put a little mustard in the water, and rub with that. If the patient be strong enough, let the limbs be put under a tap or spout for one minute, and then have them well dry rubbed with the hand till warm; or give a little dry mustard and hand rubbing. For general treatment, see cases in this book; use also 148, 149.

Directions for rheumatic cases, where there is inflammation and pain in the joints.—Steam them over boiling water for twenty minutes three times a day, and sponge with tepid or cold water afterwards; and keep them packed with calico strips (see list, No. 214). When you cannot get steam, foment, as in list 144; also fomentation pack, No. 46, to the whole body twice a week would be highly serviceable; also spinal slapping occasionally, or hot mustard baths to the limbs for ten minutes, with a tepid wash after. Regularly morning and night have the whole body sponged over with tepid water, and regularly wear the body bandage, with flannel over it, if cold.

LUMBAGO (from *Lumbus*, the loin). A rheumatic affection of the muscles about the loins. The Hydropathic treatment is exactly the same in principle as for rheumatism in other parts. A patient, age about 55, rather stout, general good health, but with a dyspeptic tongue, from want of the daily application of water to the skin and whole body, and not using the wet body bandage for constipation, but taking a little physic instead, from extra over-exertion, and the stomach of course participating in the derangement of the system, was suddenly seized with severe lumbago pains; he wrote to me for advice, and, after a little relief at home, came to my establishment. I treated the case first for derangement of the digestive organs, endeavouring to soothe the pains in the back by our fomenting pads and hot can, which soon gave some relief; but until the stomach can be put right, the pains will not be got rid of, as it is simply mucous inflammation, which nature, true to the self-preserving principles of the frame, endeavours to throw off from the vital organs on to those parts which do not interfere with existence. Treatment first in the morning:—Nos. 93 or 9; put on a large piece of spongio piline, sprinkled with hot water, over the loins, where the pain is, and over that No. 163 or, if no spongio at hand, No. 168; remain in bed till the pains are relieved. At 11 o'clock, have large mustard plaister over the loins, as long as it can be borne; wipe it off with dry cloths, and then have No. 141; and at 4 in the afternoon, have 93, 19, keeping on the leg bandages, with plenty of flannel over, all night, mustard plaisters to the feet, one and a half inches broad, and bound on with dry calico bandage and flannel. No flesh meat, or any stimulants or coffee, but little food, and that of a simple kind. The following morning, if pain is yet severe, repeat the previous day's proceedings, and remain in bed; but if it is abated, begin at 7 o'clock with 9 or 19, and keep on only the spongio and body bandage. rubbing the loins every time previous to putting on the spongio with hand and tepid water one or two minutes; at 11 o'clock, No. 144, and do not disturb the body more until 9 o'clock at night, unless the pain is severe, when, if that is the case, put on dry hot fomenting pad over loins, and one in front, and dry hot fomenting can for one hour or longer; afterwards rub the part with hand and tepid mustard and water, then sprinkle the spongio with hot water; replace it and the body bandage wrung out of tepid water.

When the pain is relieved, rise and sit in easy-chair; but the less the back is used, the sooner the inflammatory attack will subside. After the first two days, and if the attack is subsiding, have No.19; keeping on spongio and body bandage for a week or more; and when leaving it off, have dry flannel or, what is better, No. 168. The part will be very susceptible to cold for a considerable time. If any return of the complaint, use No. 64, and the bandages and spongio No. 163, wrung out of hot water, and a flannel wrapper over it, night and day, will soonest get the stomach and bowels in order after the first severity of pain is over. After the attack has subsided a week, get to No. 2 twice a day, No. 51 once a week, No. 39 once a week; then go on ordinary home treatment. No. 163 should be worn for several weeks, or until crisis is out and partly over. The complaint must be treated as a stomach disorder, and live accordingly; after meals, No. 76 or 77 is useful; No. 59 is useful, instead of fomentation, after the first day or two, and may be repeated several times in the week, if the person is at all stout.

ALLOPATHIC TREATMENT OF RHEUMATISM.—It may not be uninteresting or uninstructive to give some extracts from the standard authorities of the day as to the opinion of the medical profession, both of their idea of the nature and causes of rheumatism and their mode of attempting cure. The same distinguishing line of action, it will be seen, is adopted as in all their attempts to restore failing or fallen nature;—strong purgatives, calomel, &c., bleeding, blistering, burning with moxa (*see article on this in index*), seton, issues, opium, &c., "*cupping, blistering, and active purgatives long and steadily continued*" (*Hooper*); and when the continued effects of such means shows the natural result on the sinking frame, then "*stimulants and tonic medicines*" are tried for a time, to be succeeded by the previous plans. In all cases of chronic rheumatism, says the article, stiffness of the joints is to be dreaded; and so recommends exercise. *This has made permanent cripples of thousands; for all experience proves, that the more a rheumatic joint is used, the stiffer it becomes, and the more painful;* nevertheless such advice is still given, and being by the profession followed, until regret comes too late. Hooper in another place says, that "*Rheumatism is aggravated by motion*"! "*In all cases pain is, if possible, to be relieved, and generally opium will be found the only effectual remedy.*" Now opium can stupify, but not give renewed vitality, and it does infinite mischief elsewhere, according to their own showing. We remove pain by our fomentings, bandages, &c., bring out the inflammation on to the surface, not by burning with moxa, &c., but simply by causing more vitality in the part; and this will always throw off morbid or inflammatory matter, at the same time relieving the stomach, not poisoning it with "*full and free doses of calomel,*" followed by black draught, scouring the poor bowels and the liver. Where are Sir Charles Bell's and Dr. Hall's discoveries recognised in all this? Where is the vis vitæ or power of life regarded? The body might be some automaton machine, that required polishing, cleaning, and patching; and not muscle, mucous membrane, glands, and the curious variety of tissues, &c., all acting and existing by the undefinable yet undeniably existing nervous fluid or electricity, which the same practitioners show us holds all the gas, and water, and silica, and salts composing the body in its form and gives it life.

Hooper's Medical Dictionary, a modern standard work, states:—

"RHEUMATISM (from the Greek, I am afflicted with defluxions) is an affection of the extremities and external coverings of the human body, occupying the muscular, tendinous, and fibrous textures, and characterised by pain, stiffness, and swelling of a joint, with or without fever, according to the violence of the disorder. In common life, a threefold distinction is made, viz., into the true rheumatism, the rheumatic gout, and the rheumatic fever. The two latter alone merit the title of *inflammations*, but there is obviously a close analogy in the pathology of all these affections. In their symptoms and mode of treatment, however, sufficient difference exists to entitle them to separate examination. It is certainly a curious circumstance, considering the frequency of this complaint, that there should still be so much obscurity in regard to several of the fundamental doctrines connected with rheumatic inflammation. This may be partly explained, perhaps, from its being a disease of so little danger, as never to have received any elucidation from the labours of the morbid anatomist.

"*Acute rheumatism.*—We shall begin by the consideration of that highest grade of rheumatism, called the rheumatic fever, the acute rheumatism of nosologists, a painful and severe disease, thus characterised. It is ushered in by a sudden attack of rigors, followed by the usual symptoms of pyrexia, and is particularly distinguished by the great pain and swelling which affect one or more joints, coupled with an utter inability to move them, and very commonly with considerable redness. The affected joints are acutely tender to the touch. The pains are aggravated towards night, and for the most part, at all times, by external heat. The swelling, except in certain cases hereafter to be specified, does not take the form of the joint, but is diffused over the cellular membrane in its neighbourhood. Several joints are commonly affected at the same time; but one of the most singular phenomena of rheumatic inflammation is the strong tendency which it exhibits to *shift its situation;* to abate in one or two joints, often very suddenly, and to become as suddenly violent in another and a distant part.

"The accompanying fever presents several important peculiarities. The pulse seldom exceeds 100 or 110 in the minute; but instead of the hardness which characterises inflammatory fever, it is full, soft, and as it were *round.* The skin, instead of being hot, harsh, and dry, is commonly in a state of profuse perspiration; and a remarkable acid odour of its secretions may be noticed. The tongue is always deeply loaded. The papillæ appear elongated, and covered with a thick and abundant mucus. The functions of the brain are in a peculiar manner exempt. Headache is seldom present in any form of rheumatic inflammation, acute or chronic; and delirium is almost unknown. There is great thirst, but rarely any nausea or vomiting. The bowels are costive, though easily made to move. There is a sallowness in the aspect, and a peculiar expression of the countenance, sufficiently distinct from that of common febrile anxiety.

"*Terminations.*—Different as are the local and constitutional symptoms from those of other phlegmasiæ, the terminations of rheumatic inflammation are no less peculiar. The local inflammation may run high, but it never proceeds to suppuration. It is seldom, indeed, that any permanent injury is done to the joints; for if effusions of a transparent gelatinous fluid into or around the sheaths of tendons and the capsular ligaments take place, they are commonly absorbed in a short time. The most important consideration, in this view of the subject, is the disposition which exists, in a state of acute rheumatism, to an affection of some internal organ by *metastasis* (*translation to the heart, &c.*), or rather by extension of inflammation; for it is not often that the joints are relieved when this event takes place. *The organ chiefly liable to be so affected is the heart, and its investing membrane, the pericardium, and it is from this occurrence alone that any danger in the progress of the disease is to be apprehended.* The symptoms that result are those already described when treating of pericarditis. It was then remarked, that the circumstances which occasion this extension of rheumatic inflammation to an internal organ have never yet been satisfactorily determined."

Lowering the vitality of the nervous system by drugs, blisters, &c., often determines the inflammatory action to the great muscles of the heart. I have had many patients who have been thus affected, after allopathic treatment of rheumatic fever. This is never the case with our mode of treatment.

"*Recurrence of rheumatic fever.*—No disease is more liable to relapse on slight occasions than acute rheumatism. Going out a little too early in the open air, too much exercise of a particular joint, or an excess in diet, have frequently brought it back in all its former violence. Acute rheumatism is characterised also by a tendency to recurrence after a long interval. Those who have once suffered from an attack of the disease should therefore be particularly careful to avoid what we shall point out as its exciting causes, or to obviate them by proper attention to clothing. Rheumatism is certainly the most tedious of all the acute inflammations. In many cases it appears to run a defined course, which does *not admit of being shortened by any process of treatment, and in a certain length of time to wear itself out.* This is seldom less than a month, or longer than six weeks. *That the acute sometimes terminates in a state of chronic rheumatism, cannot be doubted;* but, instead of being a frequent occurrence, as is often imagined, this is in fact rare; and though the recovery from genuine acute rheumatism is tedious, it is usually perfect."

As to "*running a defined course, which does not admit of being shortened by any process of treatment,*" this is the case probably with drugs, but not with Hydropathy. A friend of mine, a surgeon, two years ago had rheumatic fever. He told me he never felt for such cases before, but could then. He lay for months unable to attend to his practice, and a year after had still some aches and pains. I told him he had not got the disease entirely eradicated. Such a case we should have cured in two or three weeks, and thoroughly, as we have often proved. Then follows the Allopathic remedies.—

"*Treatment.*—If an opinion were formed from the various and even opposite modes of treatment which have been recommended in the common acute rheumatism, not upon theoretical grounds, but after ample and successful experience, it might rationally be supposed that the disease occurs in the most strength, violent vomiting and purging, a wiry and almost imperceptible pulse, or '*a state of utter and very alarming insensibility*; and in some constitutions these effects have followed *from the use of even a common dose*.' Now, I would ask, under these circumstances, how is it possible to find out the right quantity? for he says, terrible effects, destructive to life, may be followed by a common dose. The terrible effects of any dose of such dangerous stuff on the vitality of the nervous system must be evident to all. All here again is war against the body, with its marvellous delicate structure; nothing comforting to the frame, except brandy and usquebaugh (*Irish for mad-water*), and any indulgence in them must be paid for in more inflammatory action. Dr. Cullen thinks warm bathing, burning with moxa, &c., induce the inflammation to shift from one part to another, and repel the inflammation to some more important, and, consequently, more dangerous, parts; while opium, though it affords relief in present paroxysms, occasions them to return with greater violence; and therefore observes, by way of conclusion, "The common practice of committing the person to patience and flannel alone is established upon the best foundation"!!—a pretty conclusion to come to after all the directions Hooper gives for his bleeding, physicking, burning, poisoning applications, and the brandy, the Irish mad-water, &c. &c.! Patience and flannel are, however, far more in accordance with the nature, mode of cure, and the office of the organic or nutritive nervous system discovered by Sir Charles Bell and Dr. Marshall Hall, the last thirty years.

We look at the causes of the disease, and quite agree with Hooper and his brethren, that indigestion and a vitiated state of the blood and tissue, and the lymphatic system, &c., are the causes of the complaint. Next, how to withdraw these vitiated humours, and subdue inflammation. First, we have the skin, with its millions of sudorific and sebaceous glands,—a very powerful apparatus to draw impure and vitiated matter out of the body. Hooper says, in this disease, the body is costive, and the urine pallid; but to remedy this state, he never thinks of the powerful means in the skin to set these offices at liberty. We can apply our wet sheets, and our fomentations, and our bandages, without running the least risk of bringing on "*syncope, purging, and vomiting*," or the "*alarming state of insensibility*" Hooper describes. We modify the temperature of our appliances so as to give some tone to the system, but not to shock the nerves,—they are already in too suffering a state to have further torture; then by keeping the air from the gouty part, and applying moist warmth, we soothe, and by our body bandages we stimulate the liver and bowels by comforting them, not by administering poisonous physic. We subdue the mucous inflammation in the stomach by our lazy pack, No. 50, or by 62, 69, 47, 163, we take care no matter goes into the stomach, to add inflammation to what already exists,—no "mad-water;" we equalize the circulation by our hot and cold dripping sheets and our sitz baths, and the effect of drawing out morbid humours through the skin and absorbents is soon seen in the improved appetite for food and renewed vitality of the whole frame.

Hooper says, "*But our sheet anchor is opium, and it should be given freely and in union with some preparation of antimony, so as to act towards the surface generally, and thus restore to the living power its interrupted equilibrium.*" Restoring living power, or nervous vitality, by a free use of opium and antimony!! I need make no comment on such a desperate absurdity. The public heard a good deal of the *lowering power* of opium and antimony in Palmer's trial, the poisoner of Rugeley; but never since physic was invented, of such purgatives and narcotics *restoring* living power.

CASE:—A gentleman, age 55, rather stout, came with gout in the right foot; had lived regularly and moderately, but of sedentary habits, spending all the day, but about an hour, indoors, with his mental faculties exercised on the same subjects day by day and year by year; had periodical attacks for many years, but, from being moderate in eating and drinking, not of the most acute kind; troubled with piles, the almost invariable consequence of a deranged liver. The following treatment ordered, on arrival, to be made more tonic as the disease subsided.

On rising first day, hot and cold sheet, covering gouty foot, both from the cold water and the cold air before commencing; after rubbing dry, put on flannel and body bandage night and day, the flannel part well wrung out of tepid water; dress, and then attend to gouty foot; first rub the foot between the hands with hot mustard and water for two minutes, then dry with cloth and hand, rub gently, and rub the instep and leg with both hands, rubbing upwards, and not downwards, for three minutes; then wring a merino or lambs' wool sock out of tepid water, put it on the foot, and a strip of mackintosh over, and over the mackintosh a lamb's-wool sock, and dry flannel, bandage the leg to the knee, then sitz No. 103. Second morning, a 6 or 8 minutes' steamer and cold sheet, instead of hot and cold sheet, and then the other treatment as before. First forenoon, about 11 o'clock, Nos. 62 and 103, foot not to be unpacked in any forenoon treatment; second forenoon, Nos. 103 and 121; third forenoon, Nos. 51 and 103; fourth, as second. Afternoon, 90, and treat gouty foot and leg as on rising, then leave packing on till morning treatment; diet, 208. No. 77 important, also 168 and 177 when crisis comes out on gouty part, then use 145 or 147. No. 200 sitting; walk as little as you can help, and have legs in horizontal position, or the gouty one at least.

SCROFULA CASES.—Where there are any affected parts which can be immersed, attend to 148, putting a little meal into it, and do it from two to three hours at a time; when not in treatment keep wet wash-leather all over part, and flannel bandages over, always renewing the wet leather whenever at all dry. After the above process has removed the inflammation, then the No. 118 once a day, alternate with 148, and gradually take the 118 alone twice a day. Give general constitutional treatment during this local treatment.

CASE OF SCIATICA RHEUMATISM IN THE HIP AND LEG.—A patient, who has been under treatment for some time for sciatica, and has had crisis, but who could not stay long enough to have a cure effected, has requested advice for home treatment; and I have given him the following. His age is 65; tall and stout; has been a good deal exposed to the weather; and has had indigestion for many years, shown by his white tongue and uneasiness of the stomach.

SCIATICA CASE.—Gentleman, aged 65 in November. Home treatment. The following is not exactly what is best, but as much as will be convenient probably at home:—Two or three mornings per week, on rising, have tepid dripping sheet; other mornings have soap over, and hot water sponging and dripping sheet nearly cold, or sponging nearly cold. Do all this as quick as you can; and if severe weather, have a fire in the bedroom raked over night, and re-lighted before rising, to dress by. Steam bath twice per week, with the same. No. 98 will do as a substitute occasionally. Every day have sitz bath, 85 degrees, feet in hot, or hot pad well covered up; and same time rub spine, and also rub stomach with hand and cold water; and rub hip and leg with dry mustard after. When you can, have foot of the affected leg in hot mustard and water to ankle; and have the leg and hip rubbed for five minutes with the same; the bath-man using both hands. Then dry, and put on the sciatica leg-case, made of mackintosh, lined with flannel. Have the flannel part dry in the daytime, and sprinkled with tepid water to sleep in. Little or no flesh meat, no stimulants, and nothing not easy of digestion; and not to take a full quantity of food at dinner, as when in health. Wear wet body bandage every day, wetted only over bowels, and dry flannel wrapper only at night. Avoid much walking, until pain is gone; arms and chest may be exercised sitting, without interfering with the hip. The complaint arises from indigestion, often of long standing; and time and patient perseverance in these plans, I believe, alone will eradicate the disease. It is not, of course, so soon cured in advanced life as in younger persons; but we have not failed in any case where a fair trial has been given. Good thick coat, vest, and trousers necessary; and do not put on thinner clothes some days than others. Ripe or stewed pears suitable; no apples uncooked, and few cooked; no nuts, walnuts, or dried fruit; or cakes, or plum pudding, or pastry. Breakfast on Scotch oatmeal porridge, egg, and brown bread and butter, and milk, and a little cold boiled bacon. Better without tea, except in the afternoon may take a little weak black. No supper, nor anything after six or seven in the evening.

RHEUMATIC FEVER AND DISEASE OF THE HEART.—The ordinary allopathic treatment of rheumatic fever rarely fails to leave disease or permanent functionary weakness of the heart. Under our mild treatment, this is never the case. I have had a great number of cases who, after repeated attacks, were hopeless of ever regaining their health, and in all cases where actual organic disease of the heart had not been caused by physic, have got thoroughly sound. It is also notorious how liable patients under allopathic treatment are to a repeated return of the disorder, and this is a natural and certain consequence of draining the body of the already deficient vitality. Our treatment thoroughly restores the frame, and prevents liability to a return of it, and we have never had the worst case in bed above a week.

EARACHE.—Use 135, or lay first one ear, then the other, in head bath, with soap-suds, 95 degrees, five minutes; then apply the dressing, as in 151, to each ear; repeat either of these remedies as often as pain requires.

NEURALGIA OR TIC.—This disease is on the nerves, and where the most nests of nerves are, there the disease is principally felt, such as in the face and head, hips, thighs, and legs. Great attention should be paid to the teeth when it is in the face or head, and any decayed teeth removed; then attend to No. 70, and whilst applying it, apply also 135 and 153; but instead of putting on 134 after 135, well sponge the head and face with tepid water, and wear the flannel cap for a while. The numbers 122, 123, 126, 127, 137, 132, 216, will all be useful in addition to the above. Bad teeth have been the simple cause of tic of many years' standing; and in many cases we have had, the removal of the bad teeth has made a cure. In this and all nerve cases, fasting will accelerate cure, and taking a full quantity of food increase the disorder.

RINGWORM is a skin disease. Keep the parts affected damp by wearing a piece of wetted spongio piline over them, or wetted calico, spongio over; general treatment as follows:—On rising, have No. 13; and afterwards a shallow, 80 degrees; or sponge over; or No. 14. Forenoon; well soap the head with hot soap and water, and then sponge, or pour over it tepid water. Afternoon, or bed-time: a gentle vapour bath, and tepid shallow; or sponge over; or tepid dripping sheet after foment pack. If the parts affected are well soaped over every time the spongio is damped, will accelerate the cure. Wear the wet body bandage No. 163, during the night, and a dry flannel during the day; abstain from all stimulants, and from flesh meat or coffee until well.

ITCH.—This troublesome disease is soonest cured by the application of sulphur ointment all over the body, and before it is renewed, have a thorough hot soaping with common yellow soap; about two dressings are sufficient, and any druggist will supply the ointment: the disease is easily communicated by the living animalculi, which burrow under the skin. When the itch is removed, vapour baths, spirit lamp, a hot soaping shallow, will prevent a return; care should be taken to have any garments worn thoroughly purified.

HEADACHE, or heat in the head.—Wash the head in very hot soap and water, then sponge with tepid water, and put on head bandage, No. 215 (in bath list); also 130, 131, good.

ELBOW BATH is very useful in any inflammatory action in the hand, arm, or shoulder. Put the elbow into a vessel about six inches deep, and keep it in five minutes at a time, and repeat four or five times during the day. If the inflammation is in the arm, the water must be tepid; if in the hand or shoulder, cold; as it is not proper to put every inflamed part in cold water.

NERVOUS IRRITATION FROM BAD HABITS, frequently contracted at school, and continued afterwards, often making the frame a wreck before the individual is aware of the baneful consequence. In these cases there is often a great sensitiveness to cold, and severe cold water treatment will further irritate the nervous system. On rising, have sitz, 70 degrees, six minutes; and, if convenient, have spinal rubbing while feet are in hot water, or on dry blanket, and then a hot dripping sheet, followed by a cold dripping sheet; but if this is not convenient, have the six minutes 70 degrees sitz, and then tepid dripping sheet in winter, and cold in summer, or No. 95; after any discharge, wear body bandage

No. 163 during the day, or if that is not warm, use No. 169 or 173, with a dry flannel bandage over. Thick clothing in winter and spring is necessary until the nerves are strengthened; tight trousers injurious, also sitting on soft cushions; much walking not advisable, carriage exercise better. Wear hair very short, at the back of the head especially, and sleep on hard pillow. No. 24 by a healthy man, very good, and No. 25 occasionally. All physic bad, either tonics or purgatives; 163 will keep bowels right; forenoon or noon, 70 degrees sitz ten minutes, lowered to cold one minute, and hot mustard hand and foot bath. No. 36¼ good, 131½ often as convenient, followed by 154, 65 degrees, is very good, or either separately. At bedtime, sitz 70 degrees, six or eight minutes, and sponge back of head; all stimulants bad, and coffee or tobacco. Very moderate flesh meat. No. 186, flannel damped, good; No. 112, 114, 121, all good, also cold spouting bottom of spine; No. 106, very serviceable. 16 good; also 18.

Eye, inflammation of,—from some particles of sand or dust accidentally coming in contact. Use No. 131½, and whilst head is in the bath, foment the eye with hot water, and a flannel pad, often renewing the pad, to have it as hot as can be borne; go on with this fifteen or twenty minutes, then No. 201 five minutes, with feet in hot mustard and water; then a small piece of spongio piline wetted and put over the eye, and a handkerchief over to keep it on: repeat all this several times per day, till the inflammation is subdued. As soon as most of the inflammation is reduced, omit the piece of spongio on the eye, as it should be kept from the light as little as possible, and continue the other treatment till all inflammation is subdued; then 202 every day to strengthen the eye, or 205½

CONSUMPTION, DISEASE OF THE LUNGS.—This never takes place except there is first what is commonly called a bad stomach, or bad digestion. The lungs are intersected by thousands of minute air tubes, the interior surface of which is calculated at 30,000 square inches. These tubes are also lined with minute air vessels, which make the body of the lungs almost a mass of these pipes and air vessels. The tissue or flesh lining the cavity in which they lie is of a very fine structure; differing from the coarser fibre of the flesh, or what is more properly termed muscle, of the other parts of the body. Now it will easily be understood that where so much delicate machinery is at work, and of so fine a structure, the materials must be good and refined to renew this structure; which is every day wasting and being replaced by new formation, as in every other part of the body. Persons of weak digestion, or from poor or insufficient food, make of course impure blood. Out of this bad blood the fine structure of the lungs has to be made; nature applies it, tries it, and finds it unfit for the purpose, and then tries to expel this morbid useless matter from the lungs by forming tubercles and abscesses, and so throwing it off, which ultimately destroy those life-giving organs. The formation of abscesses and tubercles is an effort of nature to throw off disease; and in thousands of cases a cure is effected by them. The parts of the lungs where these operations of nature have taken place are by them destroyed, but a cicatrix is formed where the disease has been: and which makes good the damage by cutting short the tubes around the seat of tubercle and abscess; but by this process the extent of the tubes and capacity of taking in air is diminished; and such subjects in whom this has taken place will not have the power of lungs they had previously; nevertheless, thousands go through life with good health and live to an old age, who have thus had their lungs seriously diseased. Out of 150 bodies dissected in the Hospital at Paris, 125 showed that disease of the lungs had existed, were cured, and the persons had died from other causes.

It is true many suffer from indigestion who escape disease of the lungs. Indigestion brings on chronic inflammation of the mucous lining of the stomach, bowels, and liver; this the system tries to throw off on to the non-vital parts of the body, as before noticed, in the form of boils, rash, shingles, abscess; and many have been saved from death by a broken limb drawing the inflammatory action from the more vital parts. But when the system is no longer able to throw off this inflammatory matter outwardly on the body and limbs, the weakest vital organs then give way; and the inflammatory action concentrates on the weakest parts, and serious disease sets in. Any who inherit constitutionally weak lungs are, of course, the most liable to consumption. Poor food, confinement in badly ventilated places, over-work, &c., bring on indigestion, fever, then cough; and by the red tongue showing the mucous inflammation is extending to the air tubes. In the present state of medical knowledge and practice a fatal crisis is very often accelerated by the application of blisters, and preparation of cantharides, and as counter-irritants applied to the surface of the chest, which are taken up by the absorbents and carried into the blood, and to the already irritated and inflamed lungs; besides draining away vitality when the blister "*rises.*" Good nourishing living is prescribed often without directions as to what is proper. Flesh-meat, and not unfrequently porter, ale, or wine, which only increase the inflammatory action, are often ordered. Actual disease once set in in cases of naturally weak lungs, is rarely indeed removed by the unnatural methods adopted for cure.

Whenever the tongue is red and swollen, white, or furred, persons with weak lungs should immediately take precautions before disease commences; and the only precautions they can take, to be of use, is not physic, blisters, &c., but farinaceous and vegetable diet, good air, rest and mild applications of water treatment. Of homœopathic remedies I can give no opinion from not having studied them; and therefore I neither recommend nor condemn them. When cough and expectoration have set in, the disease has commenced; but generally in such a form that with care and attention recovery may be expected. But if, in this stage, the lungs are exposed to severe cold, or to the influence of stimulating food or liquids, fuel is being supplied to the fire; and the vis vitæ, or power of life, is fairly or rather unfairly beaten down. In taking in the air each time we breathe, an average power equal to a pressure of 4 cwt. is exercised, and in discharging it to that of 3 cwt. Now when the air tubes are inflamed, the effect of this action to the lungs may be supposed; and when we consider that the lungs cannot for one minute be at rest while life lasts, it is only a matter of astonishment their destruction is not far more rapid than we see to be the case.

BRONCHITIS is very common, and persons with naturally strong lungs are often affected with it, and with them, by a little attention, the hacking short cough may be got rid of. But this is not so easily done by persons with weak lungs, for they are often unaware of the danger, in their case going on to actual disease of the lungs, or what is commonly termed consumption.

The term bronchitis does not often alarm persons with weak lungs, from their supposing it is altogether different from consumption; they not being aware that bronchitis is inflammation of the air tubes which intersect the lungs; and which inflammation, if continued, produces matter; nature's remedy to throw off the inflammation when it cannot be thrown off otherwise. But if this suppuration of the air tubes of the lungs goes on, it is easily seen that the body of the lungs cannot long resist the influence of the morbid matter, and decomposition and change of the structure must be the consequence. Many physiological terms are very inapplicable and vague, but having long been in use and adopted in works on these subjects, it is not easy to change them. Consumption is a term generally understood, and therefore I use it, although it does not give a definite idea of any particular disease.

Bronchitis, or inflammation of the wind-pipe, the first large tube leading from the throat into the lungs, and of the air tubes branching from it, is very common, and may arise from a slight cold, from loud and long speaking or singing, or from the inflammatory state of the stomach. When it is only in the upper part of the wind-pipe, a little care soon cures and restores the ciliated membrane which has been destroyed. This ciliated membrane* performs a very important office, it is on the surface of the lining of the windpipe, and in all the bronchial tubes except the most minute terminations. I can compare it the most easily to a fine downy surface, and is spread in a mucous network over the parts. This fine hair-like process is continually moving, and will show motion for hours when taken out of the body and put in warm mucilage. The office it performs is to keep the mucus, or slimy lining of the membrane, moving, so that the mucus does not stagnate, and become offensive to the delicate cellular tissue and nerves on which it rests; for the very existence of the body depends on keeping all the material changed and renewed.

Inflammation of the top of the windpipe displaces this cilia; and the mucus then not being moved away, as it becomes deteriorated, irritates the cellular tissue and nerves on which it rests, and an attempt is made by cough to do, what in health is accomplished by the cilia. This cilia on the top of the windpipe can be coughed up by a strong effort, and examined under a microscope. Now the cough which proceeds from the upper part of the windpipe can only be cured by the cilia being replaced; and to this end packing the throat with a wet wrung-out cloth and flannel over night and day, or damp spongio in day-time, is the most effectual method of drawing out inflammation, and promoting a restoration of the parts. Use 58. If irritation is great, we use a mustard plaister on the throat, and repeat it. This, being a simple vegetable substance, can never do any harm. If the slight bronchial affection is neglected, the irritation and inflammation creep down the tubes into the lungs, and then become serious. I once had a serious attack from over-fatigue and Sabbath services in my tent and in the open air. I expectorated a pint of matter in the twenty-four hours, the attack having gone on from acute, to chronic bronchitis, and unless this had been stopped, disease of the body of the lungs must soon have taken place. The remedy I used was to keep the throat red with mustard plaister; packing the throat at night with wrung-out napkin and flannel over, and washing the throat and chest with tepid water on rising. I wore a half-chest spongio compress with collar, and a calico and mackintosh spinal compress night and day, damping them twice a day; wearing body bandage from rising to noon only. On rising I had a soaping and wash over with water nearly cold, standing in hot water. In the forenoon a fomentation for twenty minutes, not very hot, wiping chest after with wrung-out towel. In the afternoon a sitz bath 70 deg. for ten minutes, having feet in 105 deg. mustard and water. A towel body pack every other day, instead of fomentation. This continued for ten days, and then I reduced the bathing, but still continuing chest and spinal compress until cough was entirely gone. I found it necessary to go to the heights of Malvern for change of air. Our private residence is low, and in the midst of large woods; and as I could not attend to the duties of my own establishment, it was better to be away, as perfect rest was necessary. I abstained from flesh meat and all stimulants; and, with the blessing of God, I was well in three weeks after I left home. Formerly I had these attacks, and the weakening effects of blistering and physic kept me in a weak state for a considerable time.

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* See engraving, page 357.

If the attack is in cold weather, it is necessary either to go to a warm climate—as Torquay or Penzance—or to keep in doors, wearing a respirator if at all exposed to the cold air, even in the passages, as cold air will of course irritate the parts. The bedroom should be aired; and I found sleeping in the respirator very beneficial. When bronchial inflammation has gone on, from discharging light-coloured, whitish matter, to dark or green, and slimy slough, sometimes streaked with blood, then the disease has attacked the body of the lungs, and is called pulmonary consumption.

CHRONIC PULMONARY CONSUMPTION.—When this has taken place, and the body of the lungs are suppurating, or tubercles forming, we use simply the half-chest spongio and spinal compress, as above; soaping the body over every morning with warm soap and water, and then giving a tepid wash down, standing in warm water. But if the disease is advanced, then, without rising out of bed, the upper half of the body is wiped over with a towel perfectly wrung out of tepid water; then, covering the upper part, have the same application to the lower part; soaping first is very necessary where there is perspiration. We have had some apparently hopeless cases of consumption which have entirely recovered; and in all cases our treatment will give relief and prolong life. Consumption takes place from various causes, and the remedies must be applied accordingly. Very frequently it is produced by a single exposure to cold, or going from a heated place to cold, or sitting in draughts, or sleeping with wet clothes on; and if the lungs are at all weak, inflammation of the body of the lungs takes place at once without bronchial affection, generally even without any cough. The darting pains are felt in the chest, and soon it is difficult to breathe.

In all these cases of sudden attacks of inflammation, our mild water treatment does wonders in a very short time. The fomenting can, with fomenting pad, should be immediately applied for half-an-hour as hot as can be borne: then towel pack, with towels wrung out of warm water, lying in pack three-quarters of an hour; and then to have a shallow bath 86 deg. one minute, well rubbing the body while in the bath. If the pain still continue, repeat the fomentation and pack until the pain is subdued; then put on full-sized spongio chest compress damped with hot water, and keep it on for a few days, or a week, until the attack has subsided. The half-chest spongio will then be sufficient; and this should be continued for several weeks, night and day, damping it morning and evening. If spongio is not at hand, chest compress of calico, with flannel enough to keep in the warmth. After the first attack has subsided, in the morning have a warm soaping over, and wipe the upper part of the body with towel partially wrung out of tepid water; keep in bed, and as quiet as possible for several days. If the pain returns, resort to the towel pack or fomentation. After a few days, if there is no pain on breathing, have a soaping on rising, and tepid sponging down, standing in hot water; putting on damp chest and spinal compresses, and still keeping quiet. In the afternoon have a sitz 86 deg. for ten minutes, keeping a hot pad to the chest while in. On going to bed, have feet in 105 deg. mustard and water three minutes, then wipe the feet with a damped cold cloth; and put on a pair of cotton socks, having the soles of the socks wrung out of tepid water, and a pair of dry lambs'-wool over them. Avoid flesh meat and all stimulants, and coffee or condiments. Avoid milk as a beverage at first, it is too heavy; for the first few days a very small quantity of food is best, such as revelenta or sago. As the person recovers, a dripping sheet nearly cold, standing on a hot pad, or in hot water, with a hot pad to the chest, or a dry one while having the dripping sheet, may be applied on rising; and the sitz bath at 85 deg. without hot pad in the afternoon or evening. Great caution, however, must be used in not stimulating the circulation too much, either by hot or cold application, until the circulation is restored. When the inflammation is on, the hotter the fomentation the better, but not so when the pain is subdued, as it would weaken and irritate. The respirator is necessary to be used in going out into the cold or damp until convalescent, and if the bedroom is cold, during night also. The great points to attend to in the first stage are to consider the delicate structure that is in a state of inflammation, and when that is subdued, the very weakened state of the parts that will not bear the changes they can sustain when in health: neglect of these points is running great risk.

TREATMENT FOR HEMORRHAGE FROM THE LUNGS.—This disease is known when the blood vomited is of a bright red colour. As soon as possible, lay the patient on the bed or couch on the back, with the head high, and place No. 153½ to feet; wet cold cloth to head, and then squeeze out a towel out of cold water, double it in four, and lay it on bare chest, and also about throat; then lay some dry flannel over towel, and keep renewing the towel out of cold water as often as it feels warm; 143 or 141 would also be useful at same time. The patient should drink frequently of cooling drink (see receipt page 128), but make it *doubly* strong of acid: keep very quiet. After the above treatment has abated the bleeding, then put on 181, squeezing the calico part out of cold water, and renew the calico with cold water whenever warm. Take very light diet, and all cold. The following day give 48, and 106, then continue for a while, as general treatment, the directions given in incipient consumption, page 178, till strength is regained.

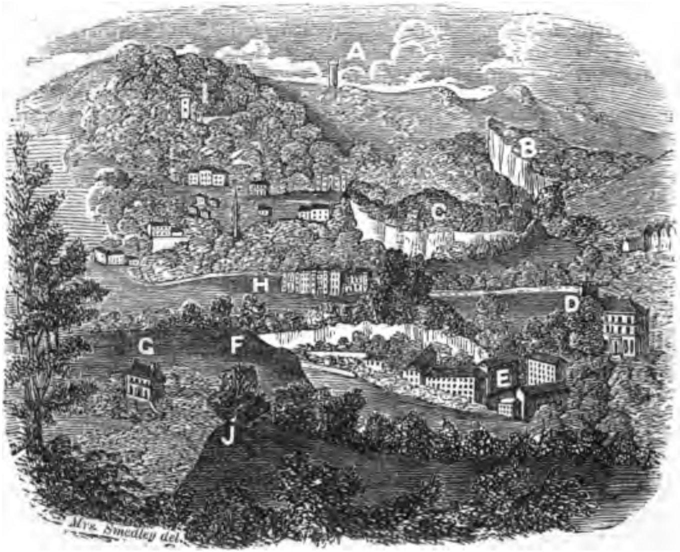
Inflammation is simply obstructed circulation of the blood. As long as life lasts the heart must go on pumping arterial or nutritive blood, for the support of every part of the body; and when it has performed its course, the blood, exhausted by all parts of the body having taken out of it the nutritive qualities, returns by another system of veins, termed "venous," containing dark-coloured blood, as seen on the back of the hands and on the surface of the body. This venous blood unites with new matter (as described at page 45), goes again into the lungs, imbibes the oxygen from the air, becomes again scarlet or arterial, and goes on again to nourish the body. All this action is supposed to be accomplished in the short space of two minutes, and about a hogshead passes through every hour; and if the blood cannot pass freely through the purifiers, which are the liver, kidneys, lungs, and the skin, it very rapidly becomes bad. Many abstruse treatises have been written about the nature of inflammation, attributing it to a morbid condition of the blood, or to some undiscovered cause of change in the condition of the blood, but never to simple obstructed circulation. But there is really no difficulty in explaining the matter, for it must be allowed that the blood must very rapidly become bad if circulation is obstructed or stopped; the part turns dark or black very soon, and no surgeon would for a moment dispute that the black or dark appearance is caused by arrested circulation and consequent venous blood. Hence, in such a case, fomentation should be used to promote circulation.

First, the obstruction to the circulation in any part causes the arterial veins there to be distended with red blood; this is pronounced inflammation. Bleeding, blistering, and purgatives are immediately administered, all directly lowering the power of circulation, and the power to overcome the obstruction; very often causing irreparable mischief to the frame. Our remedies to stimulate the action of the veins are easily applied and effectual, and leave no ill effects. Our fomenting pads, hot poultices, our mustard plasters, hot mustard leg-baths, &c., restore the circulation quickly; the blood gets round to the purifiers, and there is an end of the attack. As to bleeding to relieve the parts, it often does so temporarily, but as the heart cannot work without the veins are full of liquid, nature immediately fills up the vacuum caused by withdrawing blood with lymph or the watery fluid of the body, thus reducing the nutritive quality of the blood; and when bleeding is carried to a certain extent, so that nature cannot supply lymph fast enough to fill the veins, the heart cannot act on the deficiently filled veins, and fainting ensues. Meantime, even in the fainting state, nature is struggling for life, and exerting all her powers to refill the veins; and when this is done, and not till then, the circulation goes on again, and the person recovers from the fainting fit, but not from the outrage on nature's powers by the bleeding. As to blisters, they can only weaken and take out serum and lymph, which we had rather conserve. As to purgatives, to cool the body and lower inflammatory action, they only act by prostrating the nervous power of the stomach, liver, bowels, and kidneys, and prevent their retaining their contents the natural time necessary for the proper assimilation and purification, and greatly weaken the circulation of blood in the mucous membrane lining through all the canals. We have no trouble to overcome the most severe inflammation. It is a very simple matter to aid the power of the circulating channels, and to apply hot applications to the affected part, and by hot mustard leg and arm, or hand baths, to draw blood in excess to those parts, and so relieve the congested part.

We had recently a most severe case of congestion of the lungs; a gentleman who several years ago had inflammation of the lungs, and after many months of the usual barbarous and unreasonable treatment, by bleeding, blistering, and purgatives, survived the attack only by getting away from his medical adviser, who recommended change of air and rest. He came to our establishment for a complication of disorders, and one cold night imprudently sat a long time in a draught, and went shivering to bed. In the night he managed to put his signal out; the watchman came, and found him unable to speak, and becoming blue in the face from the stoppage of the circulation in the lungs. Our fomenting pack, No. 47, with mustard to chest, was immediately applied, with mustard cloths to legs, 141, same time mustard plasters to soles of feet, all as hot as possible, and pads on chest renewed and wrung out of hot water, sipping a little cold water, napkin wrung out of tepid water round the head. Persevered in till the patient could speak and all pain gone; but the attack being of a very severe nature, and the lungs weak from former congestion, he was a week before he got out of bed, but very soon got quite well. Spongio chest compress and spongio spinal compress were worn for weeks, and then something lighter, till all were dispensed with.

Tepid sponging over was used after fomentation partially, as 26 in Bath List. All solid food and stimulants disallowed.

A severe case of pleurisy in an old man was similarly treated, and cured in a few days. Dropsy and heart disease very often result from severe bleeding, blistering, and purgatives, for inflammation; and when these effects are produced, the same systematic plan of weakening already weakened organs is pursued: opiates to quiet the struggling heart, and prevent its attempts at circulation, drastics and diuretics, to weaken the already weakened bowels and kidneys, causing expulsion of fluids, under the idea of reducing dropsy, when the very contrary course is the only chance for the restoration of nature's powers. We have every day arrivals at our establishment, wrecked, and often incurable, from the effects of this anti-vital treatment. Within three weeks five gentlemen have applied to me, who have lost command of their legs, or palsied, from strychnine being administered for nervousness, and this by some of the highest medical authorities. They are all incurable, and will drag out a miserable existence—three of them under forty years of age. Erysipelas is simply obstructed circulation of the fine veins on the surface of the body. A case in our neighbourhood, treated by one of our bath-women, was nearly cured in twenty-four hours, by steaming the face and gently fomenting all the head, then putting on damped spongio mask, using hot mustard leg-bath, and having the body sponged over in hot soap and water and then tepid water. This started the circulation immediately, and the woman had a good night; but her friends, fancying so serious an attack of such a dangerous disease could not really be cured by such simple means, sent for a surgeon. He repudiated the treatment, ordered the spongio mask to be taken off, and anointed the face with a liniment, and gave the usual purgatives. All this immediately reduced the powers of circulation, the erysipelas in the face and head returned, and the patient died in forty-eight hours. Yet people will have faith in bleeding, purging, blistering and liniments, tonics, sedatives, and the thousand poisonous and destructive inventions against the life of the body. Typhus and other fevers are easily traced to weak circulation, and especially the weakened state of the purifiers, the liver, kidneys, and skin, all retaining the natural waste, and decomposition always going on in the body. We use our hot packs, followed by hot soaping and tepid water sponging, and short work is soon made with fever. The doctors' practice is directly opposite in principle, giving stimulants with purgatives, opiates with tonics, one to counteract the action of the other; and no wonder there is such destructive effect produced, and that all but strong people die under the effects, or linger out a miserable existence after the operation. Rheumatic fever we very easily get over quickly, by our plans as stated in this work.



VIEW FROM THE BLACK ROCKS, OVERLOOKING CROMFORD COTTON MILLS (THE FIRST BUILT IN ENGLAND), WILLERSLEY CASTLE, HEIGHTS OF ABRAHAM, AND THE HIGH TOR

THEORY OF INFLAMMATION.—I have read many of the treatises written on this subject, but find a good deal of diversity of opinion amongst eminent writers. I give in the two previous pages an article on this subject. Veins, by the profession, are thus designated from their conveying the exhausted blood to be renewed. Arteries are also veins, but they convey the oxygenized blood from the lungs, by the left ventricles of the heart, to every part of the body for its support. Thus non-medical readers are sometimes puzzled by the terms veins and arteries, which are, in fact, identical in form, but have different offices: both, as will be seen by the engravings, act by muscular contraction and expansion, and so force the blood forward, and are provided with muscular bands and with a membrane stretching across the vein internally. This membrane is larger than the exact diameter of the vein, and is pierced with an orifice in the centre. The blood is propelled through this orifice; but to stop its return, the back pressure closes the orifice and prevents a backward course, as shown in the engraving, page 312.

When the muscular power of the arteries or veins is reduced by various causes, such as severe cold, drinking ardent spirits, simple weakness, violent contusions, the nervous power is lowered, (for it must always be borne in mind that this nervous power, or electricity, of which I have spoken so much, is the moving and primary cause of all circulation in the body,) the arteries and veins cannot perform their office, and are unable to propel the blood freely on its course at some particular part, either internally or externally; here, then, is the cause of congestion and inflammation. The blood does not get forward to be purified and renewed by the lungs, the liver, the kidneys, the glands, the skin, &c., and hence rapidly becomes of a corrupt character; and unless the obstruction is soon removed, it becomes actually morbid, poisoning the whole system; decomposition sets in, mortifying and destroying the whole frame, and death soon ensues.

The primary cause of inflammation of any part being the lowered vitality of the organic nerves, it follows that every care should be taken not to further lower their power, but to raise their vitality, and this our fomentations and bandages does effectually, quickly, and safely, by drawing blood to the surface of the body and relieving the interior vessels, and quickening the circulation of the parts affected. When the inflammation is subdued, the patient quickly rallies and is soon well. The obstruction is removed, the blood moves freely through the veins, the stomach immediately participates in the relief, and calls urgently for food to repair the exhausted frame. I give food only moderately and frequent in these cases, and avoid all stimulants, and no animal food. I have had severe cases entirely cured in six to twelve hours. It is very striking to witness the rapid exhaustion of the whole body by inflammation of any vital part; this, however, is easily accounted for when the nature of the organic nerves is considered, as the lowering of their vitality in any part affects the whole until dissolution takes place, when this goes on to a certain degree. The difference in principle of treatment betwixt our methods and that of lowering the vital power of the body, which is done by medical men in the very first steps, is easily seen. They lower the body to subdue inflammation, and kill the patients, or lay the foundation of fresh inflammation, dropsy, &c.

I have had a great number of cases of severe acute inflammation; (for acute and chronic inflammation must not be taken for the same thing; acute inflammation is the first stage;) and this of which I am treating is most dangerous to present existence. When the first attack has subsided, a slow, low inflammation may still exist, but not be imminently dangerous to life; this is called chronic. Our mode of treatment in these cases commences by first taking into account the lowered vitality of the nerves of nutrition. In the first stages, and while the pain is severe, hot fomentations, as hot as can possibly be borne, with our hot pads and fomenting can, where they can be applied, laying the patient in bed, keeping as quiet as possible, and sipping water not quite cold. Our plan of fomentation has a vast advantage over the ordinary method, as the pad and can will keep hot so long, and the patient is not disturbed, nor the parts affected exposed to the air, by requiring frequent changes of the pad.*

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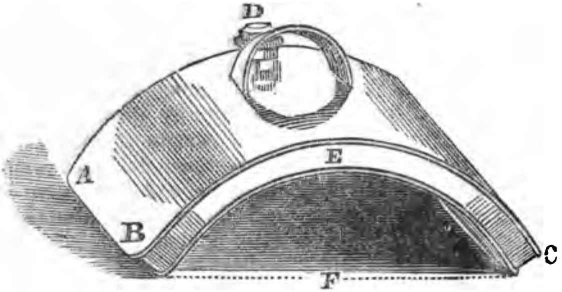
* When not fomenting apply bath list 220, with chillies added.



STOMACH AND LIVER FOMENT CAN. (SEE CUT, 384.)

STOMACH COMPLAINTS.—These proceed from a variety of causes, and great errors in treatment are often committed from want of a correct knowledge what has caused the stomach to be out of order. In a great number of cases the cause is in over-worked brain. The vis vitæ or electricity, in the nutritive nerves, is drawn from its proper office of causing the necessary chemical change in the chyme or dissolved food in the stomach, and consequent acidity takes place. This irritates the coats of the stomach and duodenum; it passes into the bowels, where it is taken up into the blood, and this imperfect matter makes imperfect and poor blood and bad tissue; and this imperfect blood circulating through the body, and coming into contact with the delicate nervous system, irritates and impoverishes the nerves by not affording healthy material for their support.

When the stomach is "out of order," persons commonly resort to drugs to restore it, which only give temporary relief, and increase the evil by forcing the stomach to act; to be followed by proportionate reaction. For example, when there is acidity, alkalis, soda, magnesia, &c., are resorted to to correct the acidity; which they will do so far as the then contents of the stomach is concerned. But as all alkalis lower the vis vitæ or electrical power of the nutritive nerves, the relief is only temporary, and the mischief more permanent; as is experienced the next time food is taken into the stomach. Thus chronic disease of the stomach and duodenum is often the result, and the individual cannot live without a constant supply of soda, which after a time ceases to give relief; and a miserable prolongation of suffering succeeds, until death relieves the sufferer.

Whenever I have acidity, which I have sometimes from over-work, I have a mustard plaister over stomach, flannel, and hot stomach can, as long as I can bear them; No. 163 wrung out of cold or tepid water several times in the day; and have a thick flannel bandage over in night. I go on taking plain food, without any stimulants or condiments, mustard, pepper, or pastry. Many persons are fidgety or anxious if they perceive acidity in the stomach; they are never at rest about it, first taking one remedy, then another, now soda, then brandy or bitter beer, until they set up real chronic inflammation of the mucous membrane. I bear with acidity until it goes off by rest and diet, and these simple baths; and if even of some continuance, no injury will result. The constant attempts to cure acidity by any other means than raising the power of the nerves of the stomach by natural means, without stimulants or medicine, only increases the nervous irritation. (See 3, 3, Cut, page 384).

Tobacco and opium are very fruitful causes of stomach disease, lowering the vitality, causing acidity and flatulence, becoming also tyrannical habits, exceedingly difficult to shake off, until they have incapacitated the poor stomach and nerves for any healthy action. The mucous membrane lining the stomach is first affected, as shown by the red and loaded tongue; then, of course, the inflammatory action is communicated to the nerves, and is shown by the white tongue, the brain having become implicated by sympathy. The mucous membrane lining the stomach being continuous in the duodenum and bowels, and passing up through the gall duct into the liver, and also to the pancreas, all sympathise with the part first affected in the stomach. This goes on increasing for a long time without great inconvenience if a person has a tolerably stout constitution, but some day an excessive dinner, or extra quantity of stimulants, or severe cold, sets fire to the train, and all the inflammatory action then concentrates on the weakest part, be that the lungs, liver, stomach, or bowels. Bleeding, blistering, and calomel are immediately and actively employed to reduce the inflammation, and with it the power of life; and the vitality of the blood is reduced often never to be restored again. Fomentations, body pack, simple diet, and rest, as before mentioned, would seldom, if ever, fail to accomplish a cure, and leave the patient uninjured. (See 50, Bath list.)

When a person's tongue is unnaturally red, cracked, and fiery, there is great danger to life, ready to be developed: taken at once by rest and simple treatment, the cause may be removed; but in all cases where this state of tongue has been allowed to come on, a much longer time will be required to effect a cure: and when the tongue is habitually loaded, it indicates that there only wants a little exciting cause, in the shape of a cold or excess in eating and drinking, to bring on typhus fever. Administering purgative medicines when the tongue is not clear, aggravates the mischief tenfold. Stimulating the skin to perspiration by hot and cold dripping sheets, short vapour baths, followed by twenty-eight shallow ones or cold dripping sheets; or No. 50 or 69; at the same time drinking cold water by sips; avoiding tea or stimulants, and little or no flesh-meat; regulating the amount of the treatment by the strength of the patient, and giving nature time to act. (See pages 215, 217.)

The great variety of causes of stomach disease makes it impossible to lay down anything more than a general principle of treatment. It must always be borne in mind that in these cases there is a depressed vitality of the whole frame, as the great plexus of nutritive nerves connected with the stomach, which are the primary source of digestive power, are in contact with the inflamed mucous membrane. The body must be nursed into vitality by the most attentive means, and in accordance with its delicate structure. All art can do is to be a nurse, and a very unpresuming one; watching symptoms, and paying regard to the minutiæ of nature's indications. If we are to be in health, we must obey the laws God has laid down as conditions of health; eating to live, and not living to eat. (See Cut, page 384, ^{3}.)

Colic, Pains in the Stomach and Bowels.—Immediately apply 69; and if that does not immediately relieve, apply 98, well rubbing bowels when in it. After 98, use 76 or 77 till quite composed and comfortable, previously putting on 169 or 163¼, with flannel wrapper over, also 153¼ often as can be borne.

Stomach Disease Diet.—From very extensive experience in these cases since our former editions were printed, we have found it very difficult to prescribe a specific diet for all cases, except so far as warning patients against what we are sure is injurious. The grand point, first, is to prepare the weakened organ, and not burden it with food; when weak, it has not power to digest a usual meal, nor to get rid of it properly. If there is not sufficient vitality in the plexus of nerves at the stomach to cause the proper chemical change in the contents of the stomach, the contents turn acid, whatever the nature of the food taken is, and from acidity goes on to fermentation, next the generation of gas; hence, flatulence, eructation, and wind through the bowels. Soda and other alkalis, or magnesia, or stimulants, are often taken for this, which only gives momentary relief, and aggravates the mischief; all alkalis lower the vital power of the stomach, and often bring on incurable chronic inflammation of the mucous lining; they lower the power of circulation, cause congestion, and disease in the stomach. We prohibit all stimulants, pastry, mustard, pepper, or vinegar, pickles, raw apples, plums, pears, or oranges, fried meat, or fried or broiled bacon, roast pork, pork pies, hot roast or boiled beef, or hot veal, goose, duck, soups, plain milk, except in small quantities; cheese, or brown bread, also seldom suits; coffee, too heating; homœopathic or prepared cocoa, bad; cocoa stewed from nibs, good; green tea, bad; also, buttered toast and cakes, cabbage, greens, turnips, radishes, cucumbers, and salads; soda, or soda-water, lemonade, and ginger-beer especially bad; and all tonics, physic, and aperients ruinous. What we have found good is, a breakfast cup of revalenta, prepared as page 282, before or on rising from bed. Breakfast: cocoa, or weak black tea, with white bread and little butter, and an egg if it suits; sometimes isinglass in tea or cocoa; some can take cold boiled bacon with white bread, but not all. Some take, with great advantage, a little Scotch oatmeal porridge to breakfast, with a little milk and crushed refined sugar before tea or cocoa; one especial point must be observed, that the porridge should be thoroughly cooked; as, if not quite soft, it is very indigestible. Porridge should be boiled at least an hour; longer, better. I wish again to warn persons with weak or disordered stomachs against giving the weak organ too much to do; a weak stomach must not be oppressed with food; and it is often surprising to our patients what a small quantity of food will not only sustain life, but cure. This, however, must be obvious to any thinking person: we do not work a weak or injured limb, but give it rest; the digestive organs, however, must work, whatever their condition is, or death ensues; but they should be treated as weak organs. Forenoon: cup of revalenta, a little white bread with a scrap of butter, and little cold water; especially avoid all kinds of biscuit, they are indigestible; also sponge-cake; and, of course, all lozenges. Dinner: cold mutton sandwich, no mustard; the mutton passed through sausage machine or chopped fine makes it easier of digestion. Raw beef or mutton passed through sausage machine, then cooked before fire, or in oven, in form of sausage, without pepper, often suits, with bread and a little cold water to drink. Avoid drinking even half a tumbler of cold water at once; it will chill the stomach, lower its vitality, and cause immediate acidity. Cold water, by sips, very good in most cases; if it does not suit, have it very near cold. Arrowroot pudding, good; maccaroni, rice, in some cases, without egg; sago, without egg; corn flour, mould, page 282; stewed pears or apples, worth trial; but some cases take only the sausage, as above, and water, and nothing more to dinner. Strawberries, gooseberries, raspberries, currants, oranges, all objectionable—either raw, or stewed, or preserved. Tea time as breakfast; and cup of revalenta or sago to supper; and, in bed, keep over stomach warm, either by pillow or dry flannel, a spongio body bandage, rubbing the stomach with dry hand or water very good at morning, noon, or night. Mustard plaisters may be used with advantage often; for treatment, see page 430, and use 77. A good deal action of the arms and body while sitting in a chair, useful; moderate walking exercise, and out of doors, necessary for recovery; many persons have naturally weak stomachs, and such cannot be always without feeling this; they should, however, be content to get through life without trying to have the stomach powers of robust persons, and if they avoid physic or stimulants, and the before-mentioned improper diet, they often live longer than robust persons, who are tempted by their powers of digestion to take more than nature requires; hence, the common cases of apoplexy, dropsy, and various other diseases which terminate the existence of persons long before their natural term of life. Insufficient clothing is a very common cause of stomach disorder; the surface of the body should be kept warm, if proper circulation is to go on, and the healthy action of the pores of the skin. Fine broadcloth coats and trousers and open waistcoats I often see mischief from.

FLATULENCY.—This troublesome ailment is often made an excuse for taking matter into the stomach that causes all sorts of mischief. People take brandy for flatulence,—they smoke tobacco for flatulence, and some refine upon this and get nice stimulating mixtures for it. Now all these things only aggravate tenfold the causes which produce it. Flatulence proceeds firstly from weakness in the nerves of the stomach, causes acidity, then fermentation; thus generating gas in the stomach and bowels. Strong healthy persons have no flatulence. Those who have, let them bear it patiently; until by proper diet, rest, and the plans mentioned on page 116, the stomach performs its office; flatulence will then disappear, and in no other way will it be cured. No. 76 on Bath list essential; if obstinate, No. 69, 153½.

One of the most fruitful causes of chronic disease of the stomach, leading to a complication of many other serious and fatal diseases, is the erroneous idea that a little stimulants will improve digestion, and, when a person feels low or dyspeptic, they will do them good. Now, exactly the reverse is the fact; for when there is a feeling of indigestion, or weakness, or pain in the stomach or bowels, there is lowered vitality, or some inflammatory action, and, in either case, stimulants only add fuel to the flame. The feeling of weakness, or dyspepsia, or pain, had better be borne until the simple remedies advised in this work are tried, than to take what is certain to cause increased morbid action. I have now a patient come into my establishment, a man of abstemious habits, who, from too close attention to business, and not allowing himself the necessary rest and breathing fresh air, got his stomach out of order; but, unwilling to obey Nature's law, he took first small quantities of stimulants, never in any excess, then soda; then, as the disorder increased, and unwilling to leave his business, he applied to the doctor, who first tried one pabulum, then another, until the patient was quite unable to attend to his business, and beyond all hope of recovery. The liver and lungs are now implicated, and severe inflammation of the whole mucous membrane lining of the stomach and bowels. We cannot do anything for him, and he must soon die, in the prime of life, leaving a wife and family.

Another friend I remember, hearty and strong when a young man, from the anxieties of a professional life drawing vitality in excess to the brain, robbing the stomach and liver, began with small quantities of stimulants, then soda to correct acidity which was caused by the stimulants, is now quite laid aside, and for years has had a life of severe suffering, and now hopeless of ever regaining his lost health.

Another eminent and wealthy man, engaged a good deal in extensive engineering works, disregarding his own organisation, and when out of order applying to his doctor, under the idea that he could give him something to set Nature's laws at defiance, found a nearly similar result: his stomach draught to create an appetite, then a little brandy and water for digestion, plenty of animal food, claret, then Vichy water to correct acidity, brought the poor deluded man to the brink of the grave. Hot, parched tongue, almost sleepless nights, loss of flesh, and a state of misery, he came to me just in time to save fatal effects from such a course, and is now going on well, but will never be strong again.

LIVER COMPLAINTS are commonly shown by the yellowness of the complexion, and what is ordinarily termed biliousness; attended by sickness, nausea, furred tongue, headache, and disagreeable taste in the mouth; and lowness of spirits, sometimes amounting to mania, from the vitiated bile circulating in the blood, and thus coming in contact with the sensitive nerves in the brain. For the anatomy and functions of the liver, see pages 325 and 343. As liver complaints arise from various causes, I can only, in this limited work, give some general advice. Budd on the liver, and others, give more particulars of the causes than I can have space for in this work. The most ordinary symptoms of disordered functionary action of the liver is, as I state above, the yellowness of complexion, nausea, headache, &c., the bile, from want of electrical power in the organic nerves, is not taken out of the blood, arising from over-fatigue or improper food, but goes on circulating in it, sickening every part of the body it comes in contact with, until the blood is so impregnated that jaundice is often produced. What bile does pass into the duodenum, or small stomach, is so acrid that the delicate nerves in the mucous membrane cannot bear the presence of it, and immediately expel it, either upwards by vomiting, or downwards, through the bowels, causing diarrhœa. First, it is necessary to be careful that nothing is taken into the stomach to cause increased irritation; and as the stomach, duodenum, and bowels more or less sympathise, when there is obstructed action of the liver, little food, and that of a very simple kind, is best until these have recovered their tone. *No stimulants or coffee* should be taken; no milk, and the less flesh meat the better; and if any, a little cold lean meat cut fine, with bread and water, and no vegetables, but farinaceous puddings without egg. 147, with 13, 10; or 64 with 141, 19; or 69, 141, 19, and 48 often; also 50, with 141, 10; also 59. Bandages 169, if 165 not warm, with 172. Whenever, from over-fatigue, I become bilious, I find foment packs soon restore me; generally one is sufficient, or 98 at bed-time 10 or 15 minutes, with slight 11 and 163, 172. When there is chronic liver disease, then the pack No. 48 and 49, as described in this, is very useful. The wet body bandage, worn night and day, is very beneficial; sitting baths, 90 degrees lowered down to 70 or 60, for five minutes, having occasionally the feet in hot mustard and water. No. 98 or 99 useful. Sometimes persons who have been in hot climates, and have there lived irregularly, suffer afterwards from atrophy, or waste of the liver; this is never cured, but life may be prolonged by care and the use of gentle hydropathic remedies. Such cases are often free from bilious vomiting, or nausea, and have fair appetite, but they cannot get nourishment from the food they take, and the countenance is pallid, the blood wanting the red corpuscles of healthy persons. Little can be done for such cases, as any strong measures, either in allopathic or hydropathic treatment, will only shorten their lives and add suffering. Care in food, with rest, and slight applications of water to the surface of the body, according to the lowered vital power, is all that can be done. If there is continued sickness in these attacks, use the stomach pack No. 50 in list, and rest in bed. The ordinary way of treating liver attacks, by calomel, is shown strikingly by Dr. Gully to be destructive to life. Mustard plasters may be freely used over the liver and stomach in bilious attacks; and being a vegetable substance no injury can arise therefrom, as is the case with blisters or mercurial ointment. From being constitutionally bilious, and having suffered from it for twenty years, I now scarcely ever know what it is, except from over-fatigue; and then a little rest soon sets me right. I can take a greater variety of food than formerly, with comfort, and I attribute this to entire abstinence from all alcoholic drinks, and the daily use of hydropathic applications, as dripping sheets, sitz baths, &c. The most painful and distressing affection of the liver is the formation of gall stones, from the liver forming impure bile, which becomes hardened in the gall bladder. These gall stones are sometimes of considerable size, and are forced through the small tube called the gall duct, sometimes rupturing it, and thereby causing death. Gall stones as large as a horse-bean are often passed, and the patient suffers the intense pain on the first passing of them, but often after is scarcely conscious when they pass, from the duct being enlarged. Hot fomentations and hot shallows and foment body packs are what we recommend when the paroxysm is on.

DISEASES OF THE KIDNEYS.—The space I have here will not permit me to go into the intricacies of this subject; I can only make some general observations upon the irregularities and diseases of these organs. Dr. Johnson's work on the subject gives the best and most extensive information.

I give in this work a clever engraving of the blood-vessels and absorbents in the kidneys, with a description of their nature and offices; and it will be seen how delicate and wonderful the action of the malpighian tubes are; for through these knots of blood-vessels the uriniferous tubes which cover them draw out, by their electrical power of attraction, the urine from the blood. How this is accomplished, physiologists have been unable to discover, for there are no perforations nor any appearances of outlet; they can only tell that the act of abstracting the urine from the blood is there performed, and carried into the bladder. Other impurities are drawn away out of the blood by the same process. Comparatively little attention is paid to the state of the kidneys in doing their work healthily. All attention is often absorbed by the bowels, when it is as necessary to health that these organs should take out the waste matter from the blood, as the bowels do the fæces. The delicate structure of the kidneys points out at once how necessary it is to live in the plain manner it was designed we should do, for all the ale and porter, and the wine and the spirits, and the hot condiments, and the infinite variety of the cook's inventions, enter the blood, and have to pass these purifiers as well as the liver.

The quantity of alcoholic drinks many use, wear these fine knots of vessels out, or cause inflammation in them; and the consequence is, in thousands of cases, destruction. The uriniferous tubes, when diseased, draw out with the urine, serum, and the life of the blood; bringing on diabetes, which so rapidly reduces the body. I am often told persons have the gravel, and that there is a gravelly sediment in their urine: this is a mistake; that sediment comes from excess of impurity in the blood, from the liver not taking its proper share of the work with the kidneys for purification; when the liver is put right, the sediment mostly disappears.

When there is pain in the small of the back, where the kidneys are situated; or uncomfortable feeling, with restriction of urine, and the urine high coloured, I find the best remedy is the use of the hot fomenting pads for half an hour; one on the back, and another on the front of the body; with a hot can underneath that on the back, and one on the front. This is beneficially stimulating to the liver and stomach, as well as the kidneys. After the fomentation, have the trunk wiped over with a towel partly wrung out of cold water; or have a tepid dripping sheet in winter, or cold one in summer; and put on the wet body bandage, re-wetting it every two or three hours.

A hot sitz bath, fifteen minutes, No. 98 on list, may be given, then a wash as before, and put on wet body bandage, wearing it day and night, or day only; over which, if it does not keep warm, put flannel, for, if not warm, it will do no good, but harm, two or three times per week. A wet body pack one hour, followed by a tepid or cold sheet, or wash, will be of great service if the other baths named do not give relief soon. Absolute abstinence from all stimulating drinks, pepper, mustard, and pastry, and abstinence from flesh meat for a few days, is necessary to relief. It must be borne in mind that if the skin and the liver do not take their proper share in throwing off impure matter from the blood and the whole body, the kidneys have extra work thrown upon them; and thus, if the kidneys do not act well, the liver and skin have more to do. And so by the skin; if that is not kept in good condition, and its pores free, the matter that should pass through it is thrown on the liver, the lungs, and back on the kidneys. Nature uses any outlet to relieve itself of impurities. Entire rest reclining, is essential in this disease. Another and primary cause of disease is the presence of albumen in the urine, from the lowered vitality of the nutritive nerves not having power to keep up the healthy chemical compounds. From the great importance of the subject, I quote Hooper largely further on. In any disorder in the action of the kidneys, try the effect of our applications to the skin, and the sitz baths, and the body bandages, and I am sure relief will be found, and without possibility of harm; not so by drugs. No. 93 bath may be used often.

DIABETES.—This is a disease that is rarely if ever cured by medicine. The cause is, that instead of quieting the inflammatory action going on in the kidney (and especially in the malpighian tubes), porter, wine, and flesh meat are ordered in profusion, along with physic, increasing the inflammation in those parts; thus, by the introduction of more inflammatory matter, under the idea that all these "good things" are necessary to keep up the strength of the patient, but which instead add fuel to that fire already burning, and thus consumes the structure with double speed. The cause of the inflammatory action is in the blood, which, by the frequent use of stimulants and improper diet, has become diseased, and its chemical properties deranged; and by it disease is carried into the kidneys and the delicate structure of the malpighian tubes. We first use strict diet, abstinence from all stimulants, &c., as I have stated in affection of the kidneys; no flesh meat, gentle fomentation, sitz baths Nos. 93 and 98; but the system is soon so lowered, that even dripping sheets and sitz at 80 degrees are too cold. For these cases we give them at 90, until they can be borne with comfort lower. There is the lowest vitality to deal with, and excessive or strong water treatment would inevitably do mischief.

DISEASES OF THE BOWELS.—I have, in the description of the different baths, given some general directions as to the remedies we use in what are commonly termed bowel complaints. The bowels are liable to various and serious diseases. The most serious, and which often proves fatal unless taken in the early stage, is, inflammation of the mucous membrane lining, and its consequent destruction, when it passes off in the form of slimy mucus, and occasionally streaked with blood. When the bowels are habitually relaxed there is weakness in the nervous power, and consequent danger of disease easily, and by trifling causes, taking place. Such cases would find great and permanent benefit from the frequent use of the sitz bath about 65 degrees 10 minutes, twice a-day, common spinal rubbing while in the sitz will be of much benefit, as well as rubbing the bowels while in the bath. Some with relaxed bowels cannot wear the body bandage, but when they can do so without causing irritation of the bowels, they will find much benefit from using it a few days at a time.

The general treatment we pursue in cases of chronic inflammation of the bowels and discharge of mucus is, to use very gentle treatment with a view of soothing the whole frame, *and avoiding any strong re-action by cold application*. First, a very gentle fomentation for twenty to thirty minutes, followed by a sitz bath, 80 or 85 degrees, for five minutes, rubbing the bowels with the hand gently, and if 80 or 85 deg. feels too cold, have the bath 90 deg. Besides this, have a lazy pack, No. 50, and a tepid wash down, or a tepid sheet on rising and at noon; a sitz at bed-time 80 deg. for fifteen minutes and no rubbing, having feet in hot flannels at the same time. Avoid all stimulants and flesh meat while there is any discharge of slimy mucus; and avoid much exercise or mental excitement. Opiates are given largely for this disease; they only allay the pain and forcibly stop the discharge, to some extent; but as opiates are entirely foreign to nutrition, the relief is only temporary, and the re-action greater. No. 67 is useful. A late workman of mine brought on this disease by the use of tobacco. His fine fully-developed frame and naturally robust constitution had long withstood the deadening effects of this baneful narcotic; but he had at last to pay for the gratification of his appetite with many months of misery, and the shortening of his existence by, probably, twenty years. For the treatment of hopeless cases of this disease to the period of death, see index, "Death from Ulceration of Bowels."

Within the last fortnight we have been called on to administer relief to two cases, the suffering brought on entirely by the use of tobacco, and even our ordinary remedy for relief in dying cases was only partially successful; both are a good age, with very strong natural constitutions, but for many years have suffered from pains in the stomach and bowels, flatulency, and nervousness, and are now paying dearly for the gratification of the pipe by painful disease, hopeless of cure. Tobacco smokers never die without acute suffering in the stomach and bowels.

A youth, age about fourteen, is just come to my free hospital for chronic inflammation of the bowels, the bowels swoln and hard, tongue fiery red, with great thirst, and purging almost constant: the case appears to be almost desperate from being neglected. He is in the service of a butcher, and I believe he has brought on this attack by taking too much animal food, producing constipation and inflammation, at first acute, now chronic. Treatment ordered: as long as the purging continues have bath No. 67 and tepid water injections. When the bowels are quieter, give Lazy Pack No. 50, mustard poultices to feet, and wet head-bandage, sipping a little water not quite cold (never drink cold water in cases of inflammation); when the last wet towel is removed, sponge the bowels with a sponge squeezed out of tepid water, and put on wet body bandage wrung out of tepid water, and flannel wrapper over. Give a little rice well creed in water or sago; take nothing to eat or drink cold; all nourishment must be warm, and no ale, wine, spirits, or flesh meat. This treatment, after twelve hours, has caused a visible improvement in the patient; who is after ten days convalescent. Worms cause disease in the bowels, and great irritation, and are a cause of complaints being exhibited in other parts of the frame that appear to the casual observer to have no connexion with the bowels. Epileptic fits, sickness and nausea, irritation at the seat, and general disturbance of the nervous system, and excessive craving for food, and griping pains, are not unfrequently the symptoms of worms in the intestines. Our remedies are general tonic treatment, and the use of the body bandage; drinking half a pint of cold water on an empty stomach four times a day. Worms are, however, difficult to eradicate. (See Mrs. Smedley's Manual, page 61.)

THE HABITUAL USE OF PURGATIVES, however small the quantity, will eventually produce disease. The idea many have of the necessity of keeping the bowels "open" by purgatives often destroys the mucous membrane lining; and the bowels will never act naturally so long as aperients are used. No harm can arise for several days', or even a week's inaction of the bowels. Stimulants and tobacco, by injuring the nervous power of the bowels, greatly tend to irregularity and disease. (See page 277.)

SORE THROAT.—For sore throat, or ulcerated sore throat, wring a napkin out of cold water, double it into four, lengthways, wrap it round the throat, and a good quantity of dry flannel over it, to produce heat. If a good heat is not produced, it will do no good. If there is much inflammation in the throat, renew the wet cloth every quarter of an hour; this persevered in night and day will rarely, if ever, fail to stop quinsey, and cure bad cases of ulceration. But as sore throat is only a secondary symptom, care in diet, &c., is absolutely necessary, and while the throat is affected, flesh meat and all stimulants must be abstained from, sipping four or five tumblers of cold water a day, by table-spoonfuls at once, during the time the affection continues, is very beneficial. If the napkin and flannel is objected to in the day-time, use a piece of wetted spongio piline, and a woollen scarf. In case of much internal inflammation and swelling in throat, use bath No. 80, one or two hours, feet in hot mustard and water twenty minutes, followed by No. 79 tepid six hours. Many lives would be saved by the use of this simple application. In simple sore throat from cold, I find packing the neck during the night, and washing it in cold water next morning, shortly and invariably restores. Use No. 181 or 177. The prompt application of this plan would save many from bronchitis and consumption. Mustard plaster may be used to the throat with advantage and safety, having the legs up to the calves in mustard and water, 105 deg. fifteen minutes. See also No. 220.

CATARRH, OR NOSE COLD.—Wet pack the forehead, then put some tepid water into a basin, or mug, and put the nose into it and commence sniffing up the water; do so for three or four minutes, then wait awhile, and do the same again, repeating this several times a day according to the severity of the attack. Keep the whole head well packed all night, a little flannel pad squeezed out of hot water, and laid over the forehead before the wet bandage is put round the head, aids the beneficial effect. This plan will also stop nose bleeding, with the addition of keeping a cold cloth at the nape of the neck. No. 111 will be of use if above unsuccessful.

See case Low Typhoid Fever, second preface, p. 21.

TYPHUS FEVER is of altogether a different kind from scarlet fever, as it is owing to the bad impure state of the blood, and may be brought on at any time by bad diet, and the inaction of the purifiers, —the skin, liver, and kidneys, &c. It commences by giddiness, prostration of strength, drowsiness, moist flabby tongue, with fetid breath, small and rapid pulse, intense heat, but not on the skin.

Begin with the wet foment pack. Put a small wrung-out wet napkin in the armpits before covering up the patient in the pack. Remain in this pack till good perspiration, then taken out and have a tepid dripping sheet, or shallow at 70 deg., or tepid sponge over, and then well dried with a dry sheet, not exposing the body to the cold. When this is done, wrap the body in dry blankets while another pack is prepared, and repeat the same operation as above, with the same after-treatment. Dress after the two packs and lie down on a sofa or bed. Repeat this when the fever heat returns, until the fever is subdued, gradually abating the number as the fever lessens. It is to be borne in mind that this fever very greatly reduces the strength; the blood and tissue is poisoned with impure matter, which, unless drawn out, soon becomes putrid, and of course destroys life. If the bowels do not act with the pack and hot pads, use an enema of warm soap and water. Wear the wet body bandage night and day, changing every two hours, if not too fatiguing; but it is essential to renew and wash the wet bandage, as it will draw out much morbid matter; the sheets and blankets should be well washed also, and often aired. (165, 172, list.)

The great object must be to raise the vitality in the nutritive nerves, and especially of the stomach and viscera, and if they can be healthily stimulated they will soon work off disease by making good material for the blood. The arms and legs should also be kept constantly packed when out of the above-mentioned pack; this is done by strips of calico wrung out of tepid water, wrapped round the limbs, and then mackintosh and flannel over, as described No. 214 in list. Renew these limb packings with the body bandage, having a fresh body bandage and fresh packings, that one set may be thoroughly cleansed of the fetid matter whilst using the other—not washing the limbs when changing the bandages, &c., as it would tire the patient too much, but wipe them with towel wrung out of tepid water.

These packs to the whole frame, and especially the fomenting pads, will stimulate the skin, the liver, and the kidneys to act in purifying the blood, and as soon as these organs can be got to work, nature will cure itself. Cold applications in the commencement of fevers, on reflection, will be seen to be injurious,—the system is deranged, the nervous vitality has lost its command over the functionary action, and any shocks by cold application causes too great reaction, which is only further drawing on the patient's strength. If the head is much affected, as it often is, a good-sized mustard poultice to the nape of the neck and top of the spine will be useful. Wipe this off dry, and renew it so as to keep up the redness. The throat, packed constantly, and bandages rewetted and changed with the others. Continue this treatment until the fever is subdued, when great weakness will follow; then sponge the body over whenever the skin becomes hot and uncomfortable, not oftener, as we do not want to draw further upon the strength by unnecessary fatigue. In this stage the water used may be 65 to 70 deg., washing the hands, arms, and feet with cold water, or wiping them with cold wet wrung out cloths frequently. During the height of the fever, the cooling drink from receipt in this book should be taken freely, with alternate sipping cold water. If the cooling drink causes any griping of the bowels, use water only. Drink whenever thirsty, as the water will be of great use in purifying the blood by promoting perspiration.*

As to diet, during the height of the fever, the less food the better, and only of a liquid nature, as arrowroot, sago, or gruel, no bread nor flesh meat, nor any solids. When the debility comes on from the fever abating, shown by the pulse, &c., then give frequent spoonfuls of arrowroot or sago made with a dessert spoonful of brandy to the pint. Arrowroot with boiling water poured over it is better than boiling it, as it has a more astringent property. As the patient becomes stronger and has a more natural desire for food, and there is no return of fever consequent on giving stronger diet, some beef tea and dry toast may be given, and so gradually go on increasing the diet, to some finely cut up lean meat, with bread crumbs and a spoonful of beef-tea over, but dry is best. No ale, wine, or spirits except as above, but the usual diet as recommended in the early part of this book. Ale, wine, porter, or any rich food or condiments will derange the action of the liver and other viscera, and consequently the blood. The system must be nursed up with the plain cool diet, fresh air and good water, and rest. Patients very soon rally by the use of these natural means of helping the diseased body to regain its healthy condition, and it must be obvious how much is gained by the system not having a great quantity of poisonous drugs to throw off, besides the morbid matter, and the advantage of not punishing the stomach and bowels with what is so foreign and disagreeable to them, and which they always expel as soon as they have power to do so,—but the organs do not come off harmless in the operation.

TREATMENT FOR SCARLET FEVER, OR DIPHTHERIA, IN CHILDREN OR ADULTS, and which never fails if applied in any reasonable time and persevered in, and no medicine of any kind given, not even castor oil or rhubarb. There is not the least risk of injury by this treatment, but certain relief, even if the case is gone too far to recover.

FOR CHILDREN.—When the usual symptoms appear, which are sore throat, nausea, inflamed eyes, and general chilliness, followed by heat and red patches on face and arms, immediately commence as follows:—Put feet into hot mustard and water, and cold wet bandage round head, whilst you prepare a "*Wet Pack*," which is done by laying a *warm blanket*, or two blankets, on a sofa or bed, and a *well* squeezed-out towel or sheet, out of hot water over the blanket; then wrap the feet up in a separate piece of warm flannel, and lay the patient naked on the squeezed-out towel or sheet, and lifting up the arms, wrap one side of the towel round the body; then lay the arms down and wrap the other side over; then well wrap one side of the blanket over, and then lay a soft pillow or blanket over the stomach, and wrap the other side of blanket over, and let the patient lay so for half, three-quarters, or an hour, taking care that the head-bandage is kept cool with cold water. When the patient has been in the *Wet Pack* the time above named, take them out, and quickly sponge or rub them over with another towel or sheet, and tepid water, and then well rub them dry with a coarse dry towel or sheet, and put on swansdown calico body bandage, squeezed well out of hot water, tight round the bowels, the outer round dry, and flannel over it. When dressed, pack the throat with a strip of calico, or a small napkin squeezed out of hot water, and a warm strip of new flannel over it, the flannel large enough to wrap round the throat several times; still keep the wet head-bandage on, frequently re-wetted when warm; and whenever the feet are cold, put them into hot mustard and water for three or four minutes, and wipe them over with a damp towel before rubbing them dry. Continue the above treatment each day till the skin is red with the rash, and then only sponge the whole body over morning and night with warm water, keeping on wet body bandage, and attending to throat, head, and feet, as above, and the patient will soon be well. If too *delicate* for the *Wet Pack*, only use the *sponging*, &c. Let them drink what cold water they want, and never mind about troubling them with food, as *very little* is needed, and that little should be very *light;* no stimulants or medicine whatever. When the fever settles principally in the *throat* and *head*, then in addition to the above apply 82,* and if throat is still bad, put a mustard poultice on till red, then spongio *dry* for half an hour, and then apply 82 again. Also put the back of head in a basin of cold or tepid water, and sponge the forehead well whilst in, for a quarter of an hour at a time, several times a day. Give "Cooling Drink"* three or four times a day, whilst fever is high. After the feverish symptoms are gone, frequently in delicate constitutions, the bowels and legs, and sometimes the whole body swells; but no alarm need be felt, as it is only from weakness; but then adopt the following treatment:—Put *soles* of feet in hot mustard and water, and then dry rub the legs with warm hands, rubbing *upwards* several times a day, and morning and night dry rub the whole body with hands and *dry mustard;* wear a piece of new flannel round the body instead of the body bandage, and wrap the legs up with strips of new flannel, and give one teaspoonful of Cod Liver Oil every night in a little cream.

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* Cooling drink, p. 128.

ADULTS.—The above treatment is also proper for older persons, only making the difference in the form of giving the wet pack. The wet pack for strong persons, No. 46 on bath list; if delicate, No. 221.

SMALL POX AND COW POX being eruptive fevers of a precisely similar kind, we treat them exactly the same as above.

SCARLATINA is only a milder form of the complaint, and may be treated in a similar manner.

Scarlet fever is an acute inflammation of the cutaneous and mucous portions of the skin, accompanied with a very infectious fever. It is of the same nature as measles and other eruptive fevers, and cannot be subdued in a day or two, but must run its course, at least seven days. The superiority of the Hydropathic treatment in these complaints is very striking; numbers have ailments left in their constitutions for the rest of their lives by the drug system, and in some the constitution is ruined.

SAINT VITUS DANCE to be treated as hysteria (see page 145).

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* 82 THROAT FOMENT.—Take half a yard of flannel, fold in four lengthways, wring it out of hot water, wrap round throat, and one yard of dry flannel over; renew every fifteen minutes for one or two hours; wipe with tepid wrung-out towel, and put on spongio or flannel sprinkled with warm water and one yard of dry flannel over.

* COOLING DRINK.—To one teaspoonful of citric acid, two of cream of tartar, and the juice of half a lemon, add a quart of cold water, and sweeten with lump sugar. If lemon cannot be procured, add a little more citric acid, and the juice of an orange.

APOPLEXY.—This is a formidable and often fatal disease, to which all who indulge in intoxicating liquors, high feeding, and indolent habits, are liable. The doctor frequently wards off the blow for a time, where he is at hand to apply to, by administering his purgatives and using the lancet and leeches, but which remedies nevertheless ultimately shorten life; and unless such subjects give up all stimulants, and live plainly, and take proper exercise, the result will, eventually, be ruinous to the frame. I have personally known not a few who have suddenly passed into eternity by this disease, and who had warning after warning, which, if attended to, would have saved their lives. But no, they trusted to the doctor's skill and to his nostrums to enable them to live in defiance of nature's laws. The bleeding and physic make sure work with the body sooner or later, according to the frequency of their application, and according to the speed the patient lives. The burden of all my subjects in this little work must be, again and again, "Sow not to the flesh," for if we do, we shall most assuredly reap corruption, and may be, everlasting ruin and misery. But numbers will be led to the slaughter, and for what? For but a few hours' sensual gratification, which can only leave regret behind. The subject is of great importance to many preparing themselves for this disease, by indulging in what is improperly termed good living, i.e. excess in eating and drinking, especially at Christmas, and other times of feasting which regularly come round, and where many inventions to torture the stomach for the gratification of the palate are brought on the table, and it is not considered good manners to refuse to partake of what has cost the host so much money. I think it best first to give the following quotation from one of the standard authorities, showing the nature, prevalence, causes, and effects of apoplexy, and then to add remarks from my own experience of not a few cases which have come under my observation during the last seven years. Dr. Hooper, in his celebrated work, "Lexicon Medicum, or Medical Dictionary," says, "Apoplexy, from the Greek, '*I strike or astound*,' so called from the sudden and violent invasion of the disease. A sudden abolition, or great diminution, of the powers of sense and voluntary motion, the patient lying in a sleep-like state; the action of the heart continuing, as well as the respiration, which is often accompanied with a stertorous sound. The fit of apoplexy is frequently attended with convulsions of one side of the body and paralysis of the other. The disease has also been called *Morbus attonitus; Attonitus stupor; Sideratio.*

"The more prominent symptoms of apoplexy being analogous to those which indicate compression of the brain, the disease was, till lately, naturally enough referred by pathologists to effusion of blood or serum within the cranium. Thence the distinction of apoplexy into *sanguineous* and *serous:* the former was supposed to arise from an overflow of blood propelled with impetuosity by the arteries of a robust and plethoric system; and the latter from a thin and dilute state of the blood, with relaxation of the mouths of the vessels, causing serous effusion. This distinction has pervaded the writings of modern pathologists from the time of Morgagni downwards. It is true that apoplexy occurs under two forms corresponding with those called *sanguineous* and *serous;* the first being characterized by a hard full pulse, flushed countenance, and stertorous breathing; the second by a feeble pulse and pale countenance: but the notion that one of these forms is essentially connected with sanguineous effusion, and the other with serous, must be entirely relinquished, for it is now well ascertained that either variety of the disease may be accompanied with effusion of blood or of serum, and that either variety may occur without any effusion at all. This being perfectly understood, we may nevertheless admit the validity of the old distinction, as far as the nosography of the disease is concerned, and consider the majority of apoplectic cases as referrible to one of two classes, which, in order to avoid hypothesis, we may call *sthenic* and *asthenic*, instead of *sanguineous* and *serous;* the real difference between them residing not in the pathological cause, but in the state of the system on which it operates.

"1. In the sthenic form, the fit is generally sudden and without warning; though it is occasionally preceded by a dull pain in the head, accompanied with a sense of weight, somnolency, and vertigo. The inspirations are deeper than natural; the face is red, and the eyes bloodshot; and there is not unfrequently hæmorrhage from the nose. On the accession of the paroxysm, the patient falls to the ground, and lies as in a heavy sleep, from which he cannot be roused. The breathing is remarkably oppressed: though at first slow and regular, it becomes more frequent, feeble, and irregular, with the progress of the fit, till at length, in many cases, it is intermitting and spasmodic In this form of the disease, stertorous breathing almost invariably occurs, arising from an accumulation of mucous in the trachea and larynx, which impedes the passage of the air in respiration. There is often, also, an accumulation of frothy saliva, which, as it becomes troublesome by its increase, is occasionally blown away from the lips with considerable force. The skin is nearly at its ordinary temperature, and covered with a copious perspiration; the pulse is full and hard; the face flushed; the eyes bloodshot and prominent, and generally closed. The cornea is dull and glassy, and the pupil for the most part dilated. In a few cases, however, there is a tendency to spastic action, sometimes extending to the limbs, but more generally confined to the muscles of the head and face, so that the teeth are firmly clenched, and deglutition is impeded; and where this state exists, the pupil, instead of being dilated, is strongly contracted. This contraction of the pupil is a symptom indicative of extreme danger. Dr. Cooke remarks, that although all writers on apoplexy mention the dilated pupil, the contracted pupil has been noticed only by Aretæus among the ancients, and Dr. Cheyne among the moderns. Dr. Cooke states, that he never knew a person recover from apoplexy who had the pupil greatly contracted, and that the experience of Sir Gilbert Blane and Dr. Temple agrees in this particular with his own. The remark has been fully justified by subsequent observation. The paroxysm of apoplexy varies in duration from eight to eight-and-forty hours, or longer. Forestus relates the case of a woman, who lay in a fit of strong apoplexy for three days, and yet recovered.

"The asthenic form of apoplexy rarely makes its attack as unexpectedly as the other, and is usually preceded by some precursory symptoms, as headache, vertigo, imaginary sounds, faltering speech, failure of the memory, or some other mental faculty, and at length a sense of drowsiness, and a tendency to clonic spasms. On the attack of the paroxysm, the patient is as completely prostrated as in the sthenic variety. The countenance, instead of being flushed, is here pale or sallow, but at the same time full and bloated; the pulse is weak and compressible, and the breathing, though always heavy and laborious, is not always stertorous. If spasms occur, they are generally of a clonic kind. The duration of the fit varies as in the preceding variety; and if the patient recover, he is more liable to a relapse, and more in danger of hemiplegia, or some other form of paralysis, than in the stronger modification of the disease. There does not appear to be the smallest reason to believe that this variety of apoplexy is more frequently connected with effusion of serum than the former. The difference between the two seems to reside principally in the greater vigour of the system in the one instance than the other; and where effusion of blood is found, as it generally is, in the asthenic form, the vessels seem to have been ruptured, not from habitual distension, but from accidental and often slight causes, that have produced a sudden excitement and determination of blood to the head, which the parieties of the vessels were unable to sustain: hence, a violent fit of coughing or vomiting, a sudden fright or fit of joy, immoderate laughter, the jar occasioned by a stumble in walking, or a jolt in riding, have been known to induce this form of apoplexy.

"The foregoing distribution of apoplectic cases under two varieties must be adopted only in a very general way, for there are many cases of an intermediate character, to which neither of the descriptions just given would accurately apply. A patient who has once suffered from apoplexy is extremely liable to a return of the disease. When the fit of apoplexy is not fatal, the patient sometimes recovers entirely and speedily, and a few days after is as well as if nothing had happened: at other times, some paralytic affection remains, most frequently hemiplegia,* which is permanent or otherwise, according to the degree of injury sustained by the brain, the constitutional powers of the patient, and other circumstances. Apoplexy is a disease of advanced, rather than of early life, although it may occur at any age, even in infancy. Morgagni states, that of thirty apoplectic patients who came under his observation, seventeen were above the age of sixty, and only five below that of forty. Apoplexy, in one or other of its forms, seems to be at least as common among the poor as the rich. Sir Gilbert Blane, indeed, has observed, from tables derived from ten years' practice in St. Thomas's Hospital, and his private consultations, that apoplexies and palsies bear a larger proportion to other diseases among the lower than the higher classes.

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* Hemiplegia, from the Greek, half, and, I strike; so called because one side of the body is affected.—DR. HOOPER.

The affection, therefore, which has been called *serous apoplexy* appears to be merely *simply apoplexy*, terminating in effusion.

"On the whole it appears to be sufficiently proved that apoplexy may occur independently of effusion or any other marked lesion of the brain; at the same time the great frequency of sanguineous effusion in this disease leads us to refer many of its prominent symptoms to compression in the greater number of cases; especially as such symptoms are precisely those which are well known to result from compression of the brain arising from injuries of the head or other causes. There are no symptoms *uniformly* indicative of compression of the brain, whether resulting from disease or injury, and there are probably few practitioners who could not testify to the truth of this position from their own experience; nevertheless, when a patient dies in a state of profound coma, with immovable pupils and stertorous respiration, we expect to find on dissection that there has been some cause of compression; and the fact that these symptoms are occasionally met with where there is no compression does not prevent us from regarding them as the ordinary characteristics of that state of the brain.

"The blood effused in apoplexy is found in some instances to have issued from a number of small arteries, and in others to have proceeded from the rupture of a single one of greater magnitude; hæmorrhage may also be venous; and a case is related by Dr. Douglas, in which the left lateral sinus was ruptured. The quantity of extravasated blood has been found to vary from a few drops to five or six ounces. Morgagni states that the most frequent seat of the sanguineous effusion is the corpus striatum, and the statement has been confirmed by the observations of M. Rouchoux and other modern pathologists. Such effusions do not seem to be more frequent on one side of the brain than the other, though Morgagni thought that they were most common on the right. Of forty-one cases examined by M. Rouchoux, eighteen presented extravasation in the left hemisphere, seventeen in the right, and six in both,—a striking series of cases, it may be remarked, in favour of the opinion that there is usually extravasation *somewhere.* While the observations of Dr. Abercrombie render it probable that effusion of serum cannot often be a cause of apoplexy, it would be premature to deny absolutely that it is ever so; for, as Dr. Mason Good has justly observed, 'it is possible for effused serum to become occasionally a cause of that which, from its symptoms, is ordinarily denominated sanguineous apoplexy; for it is possible for the exhalants of the brain to participate so largely in the high vascular excitement by which this form of the disease is characterized, as to secrete an undue proportion of fluid into any of its cavities, and thus become as direct a cause of apoplexy as extravasated blood.'"

Although these high authorities announce their opinion that apoplexy is caused by a severe congestion of blood in the brain, the blood-vessels being unable to propel their contents easily and perfectly into the general circulation, and this of course implies weakness in the nervous power of those arteries, yet the old-fashioned plan is recommended by Hooper and other famous practitioners whom he quotes. Dr. Hooper says, "The predisposing causes of apoplexy are in general such as impair the energy of the brain, or occasion too great a determination of blood to the head, or impede the return of blood from the head. Plethoric, corpulent persons, with a short thick neck, are very liable to apoplexy. Excess in drinking is one of the most frequent predisposing causes."

After he has stated that the predisposing causes of apoplexy are in general such as impair the energy of the brain, and cause determination of blood to the head, he goes on to describe his remedies, which are precisely what ordinary observers would think likely to aggravate those causes by lowering the vital energy, as will be seen from what he proposes in the following quotation from his Medical Lexicon, and which is the standard and only authorised system recognised by the College of Physicians. The doctor says, "In the treatment of apoplexy, if we be consulted during the existence of the precursory symptoms which have been noticed as frequently taking place, we shall often be able to ward off a paroxysm by bleeding, purgatives, perfect quiet, and, in the sthenic variety, a reducing regimen. Where, however, the state of the pulse, and other symptoms, give proof of weak vascular action and nervous debility, depletion should be practised with caution; and purgatives will often be found preferable to blood-letting. Yet, whatever be the degrees of debility, if there be drowsiness, vertigo, and a dull pain in the head, we must have recourse to bleeding, either local or general; for such symptoms will assuredly lead to a fit, unless timely subdued."—Hooper, page 155.

Now from his language he is evidently afraid that the weak vascular action and nervous debility may not bear bleeding, so he recommends scouring the poor bowels, and forcing their delicate absorbents to take up his aloes and calomel, and carry such stuff into the circulation, instead of some natural aliment. Bleeding and purgatives to prevent a disease, which the faculty says comes on from want of vital power in the vessels to propel their contents easily and freely! Surely it is to be hoped they will discover some method of prevention and cure more in harmony with their own description of what the body wants, to avert these calamities. Bleeding and purgatives never did give nutrition or vital power, but they do lower and extinguish it. They do not assert that there is too much blood in the body, but that it is determined in the excess to certain weak vessels. Now, instead of drawing blood by cupping, leeches, &c., from those weak vessels, which must necessarily, as the circulation goes on, be surcharged again, as soon as the viscera can manufacture more, and thereby leave the *cause* of disease in action, we endeavour to divert this excess of blood to other parts of the body, and to keep up a continued determination to those other parts until, by more natural living, the whole circulation is regulated, and the relaxed veins in the brain have had time for recovery. These vessels have long previous to the attack had an unnatural pressure upon them, either from lowered vitality, or by want of exercising the frame, or indulgence in bad propensities, which has prevented free circulation of blood through the brain, and hence pressure and often rupture of some veins.

Lowering the vitality, or the electricity in the nutritive nerves, by which alone every artery or vein propels its contents forward, must, on the slightest reflection, independent of prejudice, appear the most unlikely treatment to succeed in restoring. Nature's laws have been by some means outraged by the subject of the attack, and it is only by acting on this consideration, and returning to the strictest course of living those laws demand, which is so highly necessary to the brain, that any material or permanent restoration of the proper circulation can on sound principle be expected; for the blood-vessels in that part have not the capabilities of extension as in other parts of the body, where they may be greatly distended without danger to life, or even much inconvenience. The least pressure in the brain is felt, and if any of the minute and delicate veins are from this pressure ruptured, apoplexy and paralysis are the certain consequences, more or less. I wish to caution persons, however, from being alarmed at headaches, for if they are not living in any excess, and have not good digestion, the greater probability is that the cause of their uncomfortable feelings in the head proceeds from nervous sympathy of that part with the stomach. I have seen most distressing cases of headache, and heaviness there, cured entirely when the stomach has been put right. The person's course of life is the guide to judge if there is danger of apoplexy.

Non-professional and non-medical writer as I am, I have, since I searched into the principles of the nature and action of the human frame, been much struck with the great disregard and non-acknowledgment of some of the fundamental laws of existence by medical men in their ordinary practice of physic, in attempting to cure or alleviate the diseases of the frame. The wonderful discovery that the life of the body, and all its functions and powers of nutrition, depend, under God, entirely on the vitality and electricity of the nervous fluid, nervous power, vis vitæ, or power of life, or whatever the life in the body is, or can be described by, in the ganglionic or organic nerves, is as established and undisputed a fact as the circulation of the blood. I have frequently noticed this in this work, and it is a consideration that cannot be too much kept in view in all attempts either to keep the body in health or to cure disease; for it is an incontrovertible fact, that on the vis vitæ, or electricity of the fourth order of nerves, depends the life of the body, the action of the heart, the flow of the blood through the veins, and the power of adding to the muscular tissue, out of the blood. The functions of the liver, the kidneys, and, in fact, every principle or minute action of the body, in regard to life and nutrition, depends on the vitality of these nerves, which carry their nervous fluid or electricity into every minute part of the frame, and by that electricity the organized body lives; only lower this to a degree, and the life is quenched as effectually as the light from a taper when it is blown out.

This fundamental law, once discovered and proved true, as it long has been by Sir Charles Bell, and others who have made such new and important discoveries in physiology, so greatly beyond the discoveries of ancient physicians; ordinary observers might naturally suppose it would be the fundamental principle on which medical men would always and at all times act. They acknowledge it in cases of severe injury. They refuse to operate with the knife when this power is evidently very low. They have little hope of what is termed a constitutionally nervous subject getting through a severe operation. They have little hope of a patient rallying when they see this nervous power all but extinguished. The difference between the flesh and the bone of the weakly or nervous patient, and that of a strong person, is not regarded. The consideration with the doctor is not whether the fibre of one body is finer or coarser than another,—no, he looks at the amount of *life* it contains; and that governs his hopes or his fears for the restoration of his patient.

It is true some are scrofulous, and have impure flesh; and he will tell you these patients are bad subjects for operations; they make bad blood and bad tissue. Ask him why, and he tells you (if he knows his profession) that there is a want of vital power in these subjects to properly assimilate the food,—to expel morbid matter,—to vigorously renew the worn-out tissue,—in short, to give life to the frame. All his arguments end in the acknowledgment that it is not the want of more flesh, or of a different texture, but of *life* in it,—that is, the nervous fluid,—the electricity by which the body exists;—all else is mere gas and water, and silica and salts, held together by this wonderful vis vitæ, or nervous fluid. A patient has just arrived on the verge of an attack of apoplexy, who, I believe, was secure from seizure soon after he entered my establishment, because we set to work immediately to stop the causes of the symptoms, and by determining the blood to other parts of the frame, by our fomentations, bandages, sitz baths, foot baths, &c., and regulating his diet. He had been what is called a regular man, I believe, addicted to no excesses, of fully formed frame, and apparently healthy looking. He had erred simply from want of knowledge of the true conditions of health and life; and this information is just what I hope my book will give to numbers, and save them suffering misery and premature death. This patient had taken flesh meat in moderation three times a day, his glass or two of ale at dinner, and the same at supper, with a glass of wine occasionally, and now and then a glass of spirit and water, and cigar. He is not a man of an excitable temperament, and to all appearance would be supposed to enjoy good health.

He came with a friend to my establishment, without any intention of staying on his own account; but he said he was troubled with an uncomfortable feeling in his head, which had been coming on some time. I soon convinced him he had no time to lose in avoiding an attack of apoplexy. This regular man had no conception that his regular habits could possibly be dangerous to life, but, as Dr. Cheyne justly observes, "The daily use of wine or spirits will lead a man of a certain age and constitution to apoplexy as certain as habitual intoxication."* Plethoric corpulent persons, with thick short necks, are looked upon generally as the only subjects likely for apoplexy. This, as medical men know, is an error, as apoplexy occurs in spare persons and persons of delicate habits, from absolute weakness of the vessels in the brain, and from another frequent cause, and that is hypertrophy. Dr. Hope, in his work on diseases of the heart, says, "Eight or nine cases of suddenly fatal apoplexy, and numerous cases of palsy from hypertrophy, have within a few years fallen under my observation. In the majority of them, the patient exhibited what is commonly called the 'apoplectic constitution;' that is, a robust conformation, a plethoric habit, and a florid complexion; in others these characteristics were absent; but the total number of the cases of apoplexy from hypertrophy is much greater than I have witnessed, during the same period of apoplexy from causes independent of hypertrophy." So that whatever makes imperfect or morbid tissue tends to this disease. Hypertrophy, from the Greek "above" and "nutrition," describes a morbid increase of any organ without change in the nature of its substance, arising from an excessive nutrition in some particular part. All these dissertations on the nature, symptoms, and effects of disease, by such authorities as I quote, lead me to reiterate the advice to study the natural conditions of health, and obey them without regard to the cravings of the body.

PARALYSIS, from the Greek, "I loosen, or weaken." "A disease known by a loss or diminution of the power of voluntary motion;" so says Dr. Hooper in his Medical Dictionary. He also says, "it may be occasioned by an attack of apoplexy." It may be occasioned by anything that prevents the flow of the nervous matter from the brain into the organs of motion. He says, "the long-continued use of sedatives will produce palsy, and whatever tends to relax and enervate the system may likewise prove an occasional cause of this disease:" yet he recommends bleeding, blistering, and active purges; also, that "certain narcotic substances have been found occasionally successful, as aconite, arnica, toxicodendron, nux vomica, and opium"! Now it is well known that narcotics, and purges, and bleeding, and blistering will not restore the power of nutrition, and yet in face of this forced acknowledgment of nature's fundamental laws, doctors persevere in tapping the veins and letting out the vital fluid, and punishing the already sinking stomach and bowels by what is utterly opposed to nutrition, in the form of physic. One such case has just been at my establishment; a gentleman of fifty years age, of sedentary habits, a tobacco smoker, taking his allowance of stout and bitter ale, with flesh meat two or three times a day, besides a moderate quantity of wine, regular in his attendance at his office in London, taking purgatives when his bowels would not act, to force them to do so; then by his doctor's advice taking a little sedative mixture when his overworked brain would not allow him to sleep well, here a pabulum and there a nostrum, and these were to stifle every complaint which poor nature was making of the unnatural way in which she was being treated and doctored by the medical attendants of the patient, and afterwards by some of the first in the profession, until she could bear it no longer; for the sedatives, the purgatives, the lancet, and the leeches brought the poor patient into such an inanimate and lethargic state, with the partial loss of some of his limbs, and total inability to bear any mental work, that he was all but permanently asleep. When this climax was attained by the usual legitimate process of the profession, the patient applied to an M.D., one of the very first in London, and the following is his nostrum for raising the vis vita of failing nature:—

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* Hooper's "Medical Dictionary," p. 152.

[COPY.] White vitriol half dr. Extract of camomile sufficient quantity to make 20 pills. Take one three times a day.—Tincture of Valerian volatile two oz. Camphor mixture 4 oz. Take one small table-spoonful in a cup of water, with one of the pills as above.

This prescription was used a short time, but not accomplishing the end in view, was laid aside for the following:—

Calomel one gr. Blue Pill two gr. Compound Extract of Colocynth six gr. Extract of Henbane one gr. Mix in two pills, and take them at bedtime.—Infusion of Senna nine gr. Tincture of Senna two dr. Tartrate of Potash half dr. Manna quarter oz. Spirits of nutmeg one dr. Mix, for a draught to be taken in the morning.

This again gave neither new life nor vigour to the patient, and the following was substituted, which proved just as useless:—

Citrate of Iron two dr. Distilled Water and Spirits of Nutmeg, each one and a half oz. Mix them, add Simple Syrup one and a half oz. Take one table spoonful in a cup of Camphor Water twice a day.—Extract of Aloes eight or twelve gr. Powdered Ipecacuanha two gr. Soap twelve gr. Mix in twelve pills. Take one at bedtime.

This, being only a repetition of the former drug practice, made matters no better. When he came to me, he had such an amount of pressure on the brain, and was so sensitive to cold, with almost total constipation of the bowels from the long use of the "beautiful" and nice tasted sedative mixtures having by long use done their legitimate work so effectually, that he could not bear washing over in water under 90 deg. A few weeks' gentle fomentation to the stomach and bowels, tepid wash, with our soothing bandages, simple diet, fine air and water, and cheerful society, soon told beneficially on the grateful frame; but the poor patient is a wreck, and will never be restored to anything like sound health again. If he had had advice early, to obey the natural conditions of health, eating and drinking to live, and not living to eat and drink, and sleep, he would not have now been a burden to his relatives and himself too, and a hopeless case of restoration.

I hope to be of far more use in preventing disease than in curing it, and especially in such serious maladies as apoplexy and paralysis, which in most cases are not entirely curable, by pointing out the wisdom and duty of making the appetites subservient to the welfare of the body, a principle which too many have regretted they did not adopt before they were compelled to do so by their inability any longer to satisfy them..

Paralysis can only take place from the lowered vitality of the frame, or of the electricity in the nerves of nutrition and motion, commonly called ganglionic, or organic, by which the nutrition and functions of the whole body are maintained and governed. The will of the paralytic is precisely the same in force as before the attack. The mind sends its messages for action from the nervous centres in the base of the brain, through the medulla oblongata at the top of the spine, by its telegraph wires (the nerves), but when they come to some part of the body where the motive nerves have been by various means deprived of healthy vitality, the nerves of motion (which take their rise as before stated in the spinal marrow, as shown by the engravings) will not respond to the stimulus of the nerves of sensation. The paralytic has often feeling in the affected parts, but cannot move them. There the nerves of sensation are perfect, but they are unable to stimulate the nerves of motion to act. In other cases there is neither feeling nor ability to move. Here the nerves of motion and the nerves of sensation, which always accompany each other, are both deprived of vitality; hence the incapacity for either motion or feeling. The power of expelling or retaining the fæces and the urine often also participates in the calamity, and renders the retention of them either imperfect or impossible. I have often been told by my patients that they have hereditary tendency to paralysis. It is not an hereditary disease only so far as inheriting a weakly constitution. But a weakly constitution, by a strict adherence to the natural conditions of health, and if kept also from the vitiating effects of improper stimulating food, liquids, over-study, debasing passions, and the destructive influence of tobacco, snuff, opium, &c., will be free from any hereditary tendency to paralysis. In another place I refer to a lecture by Mr. Jolly, of King's College, on the tendency of tobacco to produce paralysis, which is well worth attention, coming from such a high authority. I can corroborate all he says as to the frequency of the use of tobacco causing paralysis. The effects of deadening the nerves by the narcotic power of tobacco, snuff, and opium, and so often rendering them unable to do their work, is easily accounted for. Scores of cases of rheumatism which come under my care are produced by their use; no smoker ever dies a natural death (that is, they do not live the full term of life they would have done, had they abstained from this injurious practice). (See pages 215—217).

By using tobacco; liver disease, nervousness, congestion of the brain, paralysis, destruction of the mucous lining of the bowels, more or less, are the certain consequences, and it is only a slow way of committing suicide, and perverting the power God has given for noble purposes, to the gratification of the appetite.* Paralysis is a terrible affliction. Not unfrequently have persons gone to bed apparently in their usual health, and found on awaking part of their frame paralyzed, and that very often for the remainder of life. At first, hopes of restoration in some degree mitigates the force of the blow, but when first one means is tried, and then another, with little or no relief, the mind often sinks into despondency, lowering still further the vis vitæ in the nutritive nerves, until further seizure comes on, and life is a burden to the sufferer, and often a burden to those who have to do the most menial offices for the poor wreck. I wish to do all in my power to warn all off these rocks, and to keep the vessel in proper trim for the voyage of life, and well fitted for carrying the soul comfortably till it arrive safely in that blessed country where God has appointed all to live who have obeyed his commands, by keeping the body in subjection to the spirit; influenced by the dictates of true religion. "Be not deceived; God is not mocked: for whatsoever a man soweth, that shall he also reap. For he that soweth to his flesh, shall of the flesh reap corruption; but he that soweth to the Spirit, shall of the Spirit reap life everlasting;"† and hundreds find this true to their sorrow, when the mischief is done, in sowing to the flesh.

Marital excesses, from the nature of the subject, I can only allude to. Persons often know little of their terrible effects until too late for remedy. I have seen many ruined for life by such excesses:

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* The Tobacco Question.—Five and a half millions of acres of land are set apart for the cultivation of tobacco. 4,500,000 pounds weight are grown and consumed. Ninety-nine parts out of every hundred are the produce of slave labour. Tobacco contains two very poisonous properties; one an essential oil, which acts directly on the brain and nervous system; the other a narcotic poison, which acts directly on the heart and the circulation. The smoker receives also into his system another property, which is generated by the action of fire, which is known as empyreumatic oil, and which inflicts very serious mischief. For a time the use of tobacco might in any form be resorted to without giving alarm after its first effects were overcome, but very few could venture on its use for any length of time without having very serious penalties to pay.

† Gal. vi. 7, 8.

paralysis, apoplexy, loss of the use of limbs, madness, and suicide are very often the dreadful consequences of these excesses. I have had the great gratification of seeing not a few, who were all but wrecks from this cause, entirely restored by our mild system, and having a knowledge how to live in future.

Nature does not always take the body by surprise; for on questioning persons afflicted with paralysis, I have often discovered that they have had repeated warnings of their attacks in different ways. As the stomach rejects food when it has been outraged by bad diet, or other causes, and thereby gives unmistakable warning of the existing mischief and inability to perform its office, so flying aches and pains in the limbs, local numbness, cramp, coldness of some part, inability sometimes to lift weights from the weakness in the arms, cold shivers down the spine (which, as I have previously remarked, is the centre of motive and sensitive power), giddiness, oppression in the head, &c. When these symptoms do not actually incapacitate individuals for their usual avocations, they are often thought little of until they become urgent, or are attributed to rheumatism—that, to the multitude, undefinable term for many ailments. Whenever a person experiences the warnings I state above, they should at once study how they can improve their general health; and this can only be soundly done by strict attention to the natural laws of healthy condition of the body. Long before paralysis comes on, the tongue will be red, swollen, and often cracked, and white on the surface, red on the sides. When this is the case, serious mischief to the whole frame is threatened, and must inevitably be the result if the causes are not removed. Our bodies, however, are not quite so frail that the derangement of some part or organ will always produce fatal effects. Though it is well for persons to understand their frame, I would caution them from continually studying symptoms of disease; as the mind, by continually dwelling upon such subjects, will often induce disease.

How many watch as anxiously for a motion of the bowels as they look for their dinner, and think that the daily recurrence of the one is as necessary for their existence as the other. The keeping up this mental agitation weakens the very nerves and organs they are so anxious to have in good order to act well. But some go to the other extreme, and take no notice of nature's hints until actual disease has set in. Business or pleasure cannot be interrupted: but nature has borne the transgression of her laws as long as there was power in the body to resist, and there is a line beyond which the strongest constitution cannot go with impunity; for although we do not live in glass houses, we do not live in cast-iron ones. I have not unfrequently had patients who have said that they have had white or furred tongues all their lives, or for ten or twenty years, and that there was no chance of that being cured; and although they have not had good health, yet they have not thought much of it. But I have said, "What, then, has brought you here? for persons don't come to have the water treatment and leave their business occupations for amusement." I have to point to their inability to sleep, to constipation, to rheumatic pains, to their yellow complexions and harassed countenances, and to their having tried for many years to get into a sound state of health by doctors' prescriptions, all without success. They come, in fact, just when nature has given some of her last warnings; and instead of punishing the body by the unnatural means of physic, blistering, &c., I immediately see in what way we can soothe the outraged frame, and coax it into good humour again, by attention to the fundamental laws of health. And the instances are rare in which we find the appeal, by these means, to be entirely in vain.

Paralysis proceeding from apoplexy is the most serious, because there is then mischief in the very centre of consciousness, and generally rupture of some of the fine blood-vessels in the brain (see Apoplexy). Simple paralysis of some local part, as the arms or the legs, without any affection in the head, may be cured. In the spinal marrow, as before observed, the nerves of motion and sensation have their origin. These nerves may be slightly affected by accident, or simply by want of vital power, which is most commonly the case when there has been no affection of the head; and then by judicious bathing, diet, and changed habits, new life is generated, and the nerves recover their original powers. Here our practice of spinal rubbings, cold back wash, cold dripping sheets, steamers, with cold shallow baths, or cold sheet after, cold or tepid sitz baths, fomentations back and front, with dripping sheet after; wet pack if there is vitality sufficient; dry rubbing, wearing wet body bandage, with our plain nutritive diet, and no stimulants, are such safe, natural, and effective remedies. The treatment must be proportioned to the strength of the patient; and if in cold weather, or in weakly cases, have the water 70 deg. instead of cold. The plain diet, as stated in this work, with good air and water, assist greatly to restore nature's powers. Warmth is absolutely necessary in paralytic cases; good thick clothing, if the weather is not warm; and all who can afford would do well to migrate to the warm climates of Exmouth, Torquay, or Penzance, for the winter and spring.

HEART DISEASE.—Many patients have come to my establishment under the impression they had disease of the heart; some have been told so by their medical attendants (as was the case with myself some years ago, when I consulted an eminent surgeon in London). Except in rare cases, my patients have found, as I did, that when the liver was got to act well, and the general circulation regulated by our soothing and invigorating applications, and the passages opened for the easy flow of the blood through the liver and other organs, there was no trace of heart derangement. Many are very unnecessarily alarmed at some irregularity of the pulse, and occasional palpitation. All dyspeptics and nervous subjects are liable to occasional functionary disturbance of this kind, but where actual disease of this organ has taken place, nothing can be done but to mitigate its effects; and this may be accomplished to a greater extent by mild hydropathic treatment, than by any other course. We have had some serious and distressing cases of this kind, and in none have we failed to give some relief. The treatment of course has to be varied according to the strength and age of the patient, and the causes which have brought on the disease. First, the diet is a matter of urgent necessity. See to avoiding anything that is at all difficult of digestion, or of a stimulating kind. Little flesh meat should be taken, and that should be lean mutton, fowl, or game. Avoid beef, and especially hot beef; a little lean cold meat chopped fine, with bread crumbs and a spoonful of gravy, is good, with a little mealy potatoe, asparagus, or cauliflower, but no greens, turnip, cabbage, nor any uncooked or fried vegetables; farinaceous puddings, good, as rice, tapioca, sago, vermicelli, or light flour puddings, with a little stewed fruit, and water to drink; bread should be taken in a moderate quantity at one time, as it swells on the stomach; buttered toast and cakes are bad.

If persons with heart disease have not the strictest and most determined resolution to take food with a view to the nutrition of the body alone, and without regard to indulging the tastes and appetites, they are continually in danger of sudden death from eating to repletion; great numbers die from want of this resolution and self-denial. I have known individuals well aware of having this malady, and of their danger, who, unwilling to resist the cravings of the appetite, have passed from their business or quiet fireside, or their luxurious drawing-rooms and social circle, into eternity, totally unprepared for a spiritual existence. The forms of religion they had practised amongst various denominations, with whom they had passed as sound good Christians, had never really awakened them to the great import of the apostle's words to the Philippians: "Whose end is destruction, whose god is their belly, and whose glory is in their shame, who mind earthly things." Those who are left behind inter the body, leaving the soul to the mercy of God, and go on in the same course; some of them to die of heart disease, others of sudden inflammation, dropsy, brain attacks, apoplexy, &c.: not a few of such instances I can now call to mind amongst those whom I formerly joined at table. (See pp. 44, 51.) If any person should read this who has any symptoms of overfeeding, palpitation of the heart, fulness in the head, &c., let them at once make a resolution to discard all but the plainest food, and reject stimulants, tobacco, &c., *in toto*; and, where it is possible, avoid all excitement of business—cold also is injurious. Several cases who have been with us for a time to have their general health improved, and to learn our treatment and practise our dietary, have gone to Torquay for the winter, where, without having a relaxing climate, they have been able to move out in the open air almost every day throughout the season.

This is a very important consideration, as when there is any deficiency of the heart's action the want of oxygen in the blood is manifest by the blueness of the lips and countenance. I have a case in my mind now of a gentleman, aged 65, who has been several times with us for affection of the heart, and whom I had great difficulty to persuade to spend the winter at Torquay; but last autumn I pressed the matter upon him so strongly, that he decided to try it, and the result is that now, when the winter is pretty well over (April), he informs me he has not had such a good winter for many years.

As to the hydropathic treatment of heart disease, the object that must be aimed at is to draw away from the heart the inflammatory action and the pressure on the weakened vessels, and infuse new life into the muscles. This must be attempted by the gentlest means; as it will be obvious to any ordinary observer, that the heart having to receive and pass through it about a hogshead of blood in the twenty-four hours, the wonder is that it stands its work at all. The blood has to be forced by powerful action through these often weak or stiffened valves and muscular cavities. They are obliged to do their work as long as life lasts. Not one minute can the often almost disabled ventricles and auricles rest from their labour. They must open and close to admit and send out again the blood which comes to the heart, by the clavicular artery, to be propelled with force into the lungs, to come in contact with the air to take its life-giving property, oxygen. We see the effects of the same disease on the muscles in the legs, knees, arms, and wrists being weakened, hardened, or contracted; and those who are in that condition feel the pain of working them in that state. Now in a similar way the powerful muscles of the heart become stiffened, contracted, and inflamed; and when this amounts to a certain degree, the heart stops, and the person dies. I can only of course give, as I have before said, a general idea of the treatment; as it will be varied according to the strength or age of the subject. We first insist upon our plan of diet and rest from the harassing cares of business.

In the morning before rising, and whilst the patient sits up in bed, give the upper part of the body a gentle rubbing with a towel wrung out of water 80 degrees, then dry this part and put on a woollen vest, and let the lower part of the body be done in the same way; and put on woollen drawers, for it is of importance to keep the lower part of the body warm. In the forenoon, have legs up to the calf put into 90 deg. mustard and water, and gradually raise the temperature to 100 or 105 degrees, if the patient can bear it, keeping the head wet with cold water whilst the legs are in the mustard and water, and remain so for from ten to fifteen minutes; and then let the legs and feet be rubbed over with a towel dipped in 80 degrees, and dry rubbed with hand till warm. Afternoon, have the feet put into 90 degrees mustard and water for three minutes, then give stomach pack (see page 70), wringing the towel out of 90 degrees' water, and keeping a hot foot-tin to feet; lying thus for three quarters of an hour, but if restless, then only twenty minutes; then on coming out, sponge over the part packed only. Bedtime, apply a mustard poultice just *below* the heart, and keep it on till the part becomes red, then wipe it off dry; 104 bath list is also good.

It is very useful in these diseases to take long sitz baths in 80 degrees water, or the degree of heat that will prevent chillness, remaining in the bath from twenty to forty minutes, keeping the feet warm with the hot foot-pan, or any similar plan, as it is not advisable to have the feet so often soaked in hot water; also 115. Packing the legs and thighs with strips (see list 214), renewing them when dry, and keeping them so till a "crisis" is well worked out upon them, will be found very advantageous. Sometimes a piece of spongio piline worn on the heart, and kept damp with *hot* water, has been found very useful if it does not bring on irritation: we have used this in cases with good effect. The reader will see, in all the above treatment great care must be taken so that none of the applications produce a *shock*, as that would be highly dangerous. Frequently sipping cold water will be a great assistance to the benefit of the treatment. During syncope or faintness, it is best to undress the person immediately, and apply a mustard poultice to the heart, and put the feet into mustard and water 100 degrees, and if possible the hands also; then dry them well. Rub the other part of body whilst the person is wrapped in a blanket, sponging head and face with cold water, and giving sips of cold water to drink. When the attack is gone over, let the person recline and put mustard poultices on soles of feet, and a warm (not hot) fomenting pad to the lower part of the bowels, keeping the head wet and the rest part of the body very warm.

Dr. Gully says, "But after all, the malady to be treated is irritation of the ganglionic nerves at the pit of the stomach" (which I have so often called attention to). Other scientific authorities take the same view, and the treatises written on the subject are no doubt in the main correct, but I am surprised to see so little said of the muscular structure of the heart in connexion with rheumatic affections of this organ. Rheumatism attacks the muscles and renders them stiff, and often causes chalky deposit; and the great muscular structure of the heart (for it is in fact all muscle, and always in work) must render it as liable, and even more so, to rheumatic affections, as any other muscular structure of the body, and from the same cause, lowered vitality. Ossification of the valves of the heart describes the state approaching to chalky formation. Rheumatic affections of this organ are much to be dreaded, as there is no rest for it, and these muscles, as all other muscles, are liable to lose their elasticity and vitality; and unfortunately we cannot get at them direct with fomentations, or other stimulating or soothing water applications. Whatever is to be done for relief, can only be done very indirectly by the treatment I name, and by proper diet, avoiding all stimulants, much flesh meat, and none at all difficult of digestion, as beef or fat. The great point to aim at, as before stated, is to draw away inflammatory action, which is certain to be present, whether the disease is rheumatic or deposit of fat, &c. All these affections tend to obstruct the circulation, and call upon the heart for excessive efforts to propel the blood, and hence the inflammatory state. The heart is liable to obstruction from deposit of fat in great feeders, and to unhealthy enlargement in peculiar constitutions. Opium, morphia, foxglove decoction, henbane, and such like drugs, will lower the action of the heart when excited, but they do it by lowering the circulation altogether, by putting the brain in some degree to sleep. This will easily be seen to be false practice, never can give nutrition, and certainly leads to mischief and increased action of the heart from weakness.

HYSTERIA or HYSTERICS.—Immediately undress the patient, and commence hard rubbing with the hand, well wetting the head with cold water, and as soon as possible put the person into a shallow bath of 80 deg. water, and well rub the body whilst in, especially round the region of the heart and down the spine; and if the patient is not too delicate, a can of cold water poured down the spine would be very beneficial. When the violence of the attack is over, then put the patient between blankets on a bed, and apply mustard poultices to the soles of feet, and keep the head well packed, and something warm over the bowels; a fomenting can is best. If a shallow bath is not at hand, then let the person sit down in a sitz bath, or large pan, in 80 deg. water, and put the feet into 105 deg. mustard and water in another vessel at the same time, applying the rubbing and cold water as before directed. Attention to p. 6 would prevent attacks; rub especially below the heart.

ERYSIPELAS.—If only slight, then apply tepid sponging, 70 degrees very frequently, according to the heat of the part, and after the sponging put on a piece of spongio piline over the part affected, damped with tepid water; or if no spongio piline is procurable, then apply a piece of linen doubled and well wetted, and then a dry bandage over of mackintosh or flannel. If the attack is severe, fomentation to the parts should be used for a quarter of an hour; and then apply the above process of sponging and packing afterwards, frequently repeating till the fever is gone. Constitutional treatment should also be used, such as a warm dripping sheet on rising, an 86 degrees sitz bath for ten minutes, twice a day, and fomentations on the bowels a quarter of an hour at night (not too hot), wearing the body bandage regularly. Keep the feet in 105 degrees mustard and water during the sitz bath. Sometimes omit one of the above sitz baths, and take a fomentation pack instead. *Fasting* is a great help to the cure of this disease, only taking cold water, with now and then a little piece of bread, until convalescent. We always and easily subdue this formidable complaint by our Hydropathic practice

SPINAL DISEASE AND INJURIES OF THE SPINE.—When real disease of the spine has taken place, either by a strain of the back or a blow, or from effects of diseases which more particularly affect this part, little can be done, and that only to alleviate. I have not known one entirely recover. I say this to warn persons from those experiments which are so often tried, and which I have known end in total paralysis of the limbs. Females not unfrequently complain of pain and weakness in the spine, especially in the lower part, which has in reality no relation to disease, but proceeds from internal operations of nature peculiar to females, and which is removed by judicious treatment of the sitz bath, bandages, and general attention to the health. Many such symptoms in females are, however, treated as disease, or affection of the spine, and cause permanent injury; we have had such cases from the hands of eminent physicians.

This work is too limited to go into the general subject of diseases of the spine, but I give a list of works which will give more particulars. First, where there is known injury to the spine, we use the spinal compress day and night, wetted three times a day, until it brings out a crisis, and also the body bandage partially; very gentle fomentation to the spine (not hot) for one hour, and then sitting on a sitz bath, and washing the spine gently with the hand for one or two minutes, and water nearly cold. Legs put up to the calves in hot mustard and water, ten minutes; this not more than once a day.

Gentle spinal rubbing, or 121, 123, bath list, is good; but any application which strongly stimulates or shocks the nerves must be avoided: the nervous centres will not bear it. Keep in a reclining position as much as possible, and adopt the simple diet recommended in this work. All stimulants, narcotics, and tobacco are bad; much flesh meat to be avoided; anything that is heating is highly injurious. Warm clothing should be worn in cold weather, as the nervous vitality of the whole frame is greatly lowered. Should the patients be induced to use lotions, blisters, or setons, they will certainly repent, but having once used them, regret will be of no avail.

If the 186 spinal compress does not keep warm, use spongio piline.

LOSS OF VOICE.—On rising, have the chest and throat rubbed with 70 degrees water, till red, then wet pack the throat, and put on a dry spongio pilino chest compress, and a piece of new flannel round the bowels; then put the feet into 100 degrees mustard and water for three minutes, and wipe them with a towel dipped in 80 degrees water, and *dry* rub with the hand. In the forenoon, put the feet and legs up to the calves into 100 degrees mustard and water for ten minutes, and rub the chest and throat again, as on rising; then pour a can of cold water over the legs, and dry rub them with the hands till warm. Afternoon, take a running sitz bath 80 degrees for ten minutes, and daily reduce the heat of this bath till it can be taken cold; rub the chest and throat again as before. At bedtime, repeat the rubbing on the throat and chest, and put feet into hot water two minutes, then put on wet and dry socks, only wetting the soles of the socks, and keep them on all night. If the above does not speedily produce a good effect, then apply fomentation on the chest morning and night for fifteen minutes before the rubbing, and also put on occasionally a mustard poultice on the chest till it becomes red.

CASE OF BURN.—Our servant, suddenly taking off the kettle from the gas stove, and leaning over, the large jet of gas came in contact with her face, and rather severely burnt her. The face was immediately washed over with brown soap and water, as hot as she could bear it, then steamed over a pan for half an hour, the soaping repeated, and the steaming again repeated; afterwards a spongio piline mask, sprinkled with hot water, made to cover the face, with holes for the eyes, mouth, and nose, was put on, and a cold wet cloth to the head, and, after lying in bed one hour, the steaming was again repeated, the mask kept on all night, and by morning the case was all but well; she laid aside the mask, and felt no inconvenience. Had cold lotions been applied, or oil, or grease, it would have been a serious case. If spongio is not at hand, calico, wrung out of hot water, and covered over with flannel to keep the warmth in, will do. (See case of burn, pp. 20, 168.)

BURNS AND SCALDS.—If the burn or scald is upon any part where steam can be brought to bear upon it, immediately get a pan of boiling water, and put some cokes off the fire into it, and hold the part over the steam, covering that part of the body and the pan of water with flannel or something woollen. After doing this for twenty minutes, then put a cold wet bandage of linen or soft calico several times round the limb, or a large piece, if it is on any other part of the body, then some mackintosh or oil silk over the wet linen, and new flannel over all; if no oil silk or mackintosh be at hand, then put plenty of dry calico before the flannel bandage. Keep repeating the whole of the above three times a day, till all inflammation is removed, then proceed with all the bandages, without the steaming, till the place is well.

WASH LEATHER DRESSING we find exceedingly effective, and in many cases far better than crisis calico; it is applied as No. 151; it is also very serviceable for varicose veins in the legs, as at page 181.

ULCERS.—After active suppuration, or where the discharge has been slight for a considerable time, it is not advisable to excite action in the part, as Nature has become weak in the part, and unable to do more there. In these cases the quieter the part is kept the better; and attend to the general health, or bring out crisis over stomach and liver, to draw away morbid matter from the system. To this end, if the ulcer is still open, apply a simple cereate plaister (we get ours from Mr. Young, 16, Pitfield-street, Hoxton, London, who prepares it in a superior manner). After covering the place with this plaister, put over spongio, flannel, or wash leather, damped to keep the part warm. Dry rub wi th hand, or mustard and water, over the parts near. If in the keee, rub the leg and thigh, and bandage the leg to promote circulation. Give general treatment, as page 6, with 50, 48, 69, 114, 73, 59 occasionally; if not very weak, use 165, 172; but if this not warm, use 169.

ULCERS, WOUNDS, and Rheumatic Pains in the Legs and Thighs. Put the legs into a leg bath 90 deg., cover the parts affected. The object of this bath is to act as a stimulant, and may be taken for an hour, and sometimes longer. It always accelerates the process of granulation, and causes an abundant suppuration, and consequently quickens the discharge of morbid matter out of the system. The same bath is also applicable to any other members of the body afflicted in a like manner. (See also pp. 170, 149.)

ABSCESSES.—First wash with common yellow soap and water, and if in a part where steam can be applied, let it be steamed for twenty minutes; if not, foment with hot water for the same time; but neither steaming or fomentation must be very hot, as, if too hot, it will irritate rather than soothe. Then apply No. 151, or if much inflammation, use 220. Keep it from the air as much as possible; steaming three times a day. We now find wash-leather best, applied instead of crisis calico as No. 151. As abscess is only the result of some constitutional disturbance, treatment to renovate the general health should be applied, at the same time with the baths and the plain diet recommended in this book, but no stimulants. I have seen abscesses forming in the glands of the neck and elsewhere, absorbed and prevented from coming to a head simply by wearing damped spongio piline, and giving a few fomentations, not very hot, and attention to diet and baths.

WOUNDS, CUTS, AND BRUISES.—If in a part that can be immersed in hot soap-suds, immediately let it be done for twenty minutes, and let the suds be as hot as can be borne. If it be a cut, strap the lips of the wound together with narrow strips of arnica plaster, then put on a piece of spongio damped with hot water, or if no spongio at hand, use thicknesses of linen, with mackintosh or oiled silk over, to keep in the warmth. When painful, if it can be done, dip the part in hot water, *without taking off the wrapping;* this is important; we never undress the wound till there is exudation, and the morbid matter gives out effluvia, then have it re-dressed altogether, as above, and repeat the treatment, if needed; it is seldom that more than two dressings are required. The spongio or linen will not grow into the wound if the part is immersed in hot water two or three times a day, or even less. If the wound is severe, and inflammation comes on in the limb, wet pack the whole limb, as in list 214, and re-wet the bandages three times a-day. This will stop inflammatory action. Should the wound be in a part of the body which cannot be separately immersed, apply hot fomenting pads, and this treatment as far as it can be done. If the cut is serious, or inflammatory action sets in, it is absolutely necessary to abstain from flesh meat, ale, wine, spirits, coffee, or any kind of stimulants, and, indeed, at all times, if sound health is to be enjoyed. Wear the wet body bandage, use dripping sheets, &c., to open the pores and invigorate the system. We have had some desperate cases, where amputation had been declared necessary, which have very soon been cured by these simple means. In cases where the fore part of the finger has been torn or cut off to all but a shred, it has been replaced, and the finger made whole. (See also pp. 170, 149.)

WOUNDS WHICH ARE SLOW TO HEAL, or when there is scrofulous or bad matter in them, and strong inflammation.—Adopt pack 223 Bath list, but only for the part affected. For instance, if disease on leg, then place the bricks, prepared as in 223, one on each side of leg and one for foot, and let them be so placed that the limb can be moved a little whilst in pack, to avoid being burnt by the hot bricks being in constant contact on one place, so that the pack may be continued an hour or two without fatiguing the limb by its being in one position so long; and when it has thus been well sweated, remove the packing, and sponge well but carefully with warm soap-suds and then tepid water, then re-dress the part quickly, to keep it from the air. As regards the dressing for such wounds, the 220 on Bath list should be attended to till nature is beginning to heal, and the parts are free from discharge; then, instead of the bag poultice, use wash-leather doubled two or three thicknesses, according to the degree of matter running from the wound, the leather well damped with hot water and laid over the wound where poultice has been, and continue the spongio and dry flannel dressing as before over the leather. The pack 223, as described above, may be repeated safely two or three times per day, as long as the part sweats well, but when the sweating becomes less, then the 223 must not be taken so often or so long, but attention must be given to keeping a change of the dressing, so that the part may be kept quite clean and damp, or the process of healing will be checked; and when removing the leather, squeeze some tepid water into wound, and sponge all round the parts affected.

SWOLLEN KNEES AND ANKLES FROM CHRONIC RHEUMATISM.—Put feet on hot-water tin, then use the cold spouting for one minute; then well dry-rub till warm. Then spout again for two minutes, and dry-rub as before, first putting a little glycerine or olive oil on hands; do the above once a day. At each treatment during the day rub in a little glycerine on ankles, and wear dry spongio on knees and ankles underneath the flannel bandages.

COLD, CATARRH, OR STUFFING IN THE HEAD.—Take No. 137 on Bath list, and then wipe over legs and feet with tepid wet towel, then 195. After getting into bed, put a cold wet cloth on the top of the head, have some boiling water and hold the face over the steam, throwing a blanket over the head and over the vessel with hot water, to keep in the steam, for five or ten minutes if comfortable (*frequently renewing cold wet cloth on the head*); then sponge face and head with tepid water, and well pack the head, according to 134. If cold is heavy, the quickest way to cure it is to keep in bed day and night, and repeat the above once or twice during the day; but if slight, the above at bed-time will suffice. 136½ after steaming will be found to hasten the cure, and even would of itself cure slight attacks.

Whitlows.—When the first indication of inflammation appears on the fingers or toes, if the hand or foot is then well steamed for fifteen or twenty minutes twice a day, the whitlow will be prevented coming forward in most cases. Experience has proved this; but if the whitlow does advance, then take a small glass or jar, and fill it with hot water, and keep the part affected completely immersed in the water constantly till well, reducing the heat of the water according to the state of inflammation; this will entirely remove all pain, and in a few days a perfect cure will be effected. When inconvenient at times to keep it immersed, have a spongio piline hottle ready, and when taking it out of the water, put a piece of linen well wetted with hot water on the wounded part, and the spongio hottle, also well wetted with hot water, over the wet linen; but in a little time the throbbing pain will be again felt, and the immersion will be found the only painless way of cure.

Case No. 11. **Whitlows.**—A gentleman, age about 44, fair constitution, gradually got into a dyspeptic state from confinement to business; and as nature will try to throw off the internal mucous irritation on to some part of the body where the blood-making processes are not going on, a slight hurt of the hand determined the crisis to that part, and defied all attempts of his surgeon to cure it; the hand gradually got worse, and whitlows came, with severe inflammation. The patient then tried Hydropathy; but the application being cold, and more with a view to raise the vital powers by tonic treatment, that also failed to cure the arm and hand, although the general health was much improved, and the bowels acted without aperients, which had not been the case before. The consequence of raising the general health was seen in an attempt by nature to throw off inflammation through the leg by crisis; but when the hydropathic practitioner observed this, he was alarmed, telling the patient that he must endeavour to stop it, as he had quite as much as he could bear with the crisis in the hand and arm. The leg was kept cool, and all warm treatment avoided, and the crisis, which was appearing, kept back; the hand and arm became proportionably more inflamed and painful, and after being under cold water treatment from February to June, he came to me in a very suffering state; the hand and arm highly inflamed and painful, the hand red as fire, and not able to bear touching; his stomach and whole frame getting worse, as the constant pain irritated the nervous system. I immediately applied steaming to both hand, arm, and leg, packing the hand, baths 13 and 10, and 28, 46 once, and 38, 51, 59, 90, according as he had strength to bear them, 163½, 172, 208, 207. Crisis soon came on in the leg, and very soon began to relieve the arm and hand,—taking a share in the purification of the system. Nature prefers carrying off the inflammatory matter in the system at the farthest points from the trunk, and so we rarely have crisis in the arms, except there has been some recent or remote injury. The patient was now put under evaporation, No. 147, for both hand and arm; the hand constantly covered with a silk glove, never removed, and kept in the tepid water; and if at any time particularly painful, increase the temperature of the water to 90 degrees. No. 10 was now given, with 13 every other day, as he could not bear cold, on account of crisis; No. 107 forenoon and evening, and 39 twice a week. This treatment answered completely.

Chapped, Sore, or Rough Hands will be cured by persisting in the use of the means recommended in Bath List, No. 192. It is of consequence the hands should be kept covered with the damp gloves night and day till well.

HOT SOAP-SUDS BATH, for bad legs, arms, or hips, or crisis on trunk, or any part, for twenty minutes twice per day, is very safe and very effective, covering the part up after from the cold: it will heal wounds, and bring vitality into diseased parts.

CRISIS CALICO is merely fine white calico made soft by rubbing; old linen will do.

BITE ON THE HAND BY AN AMERICAN RAT.—A labourer, while unloading an American ship, was bitten in the hand betwixt the forefinger and thumb by a large rat; did nothing to it till night, when his wife put on a bread poultice, which he kept on while at work for three days. When the pain was gone, a fortnight afterwards, the hand began to swell, and became very painful; went to the hospital, where it was lanced; some black blood and a little yellow matter came out. The surgeon ordered the hand and arm to be fomented with hot water, and apply linseed poultice night and day; went on with this a week, swelling went down, and pain; in another week the swelling and pain returned, when the man came under our care. For want of the treatment being carried farther to produce a crisis and discharge of matter out of the whole arm, and more general treatment to renovate the general health, the system could not throw the poison off. Under our treatment, the lumps which had formed in the muscles of the arm, and which would soon have become abscesses, were absorbed in one week, and a good crisis got out over all the arm; all pain ceased, and the man is now entirely restored.

CASE OF INJURY TO THE KNEE.—A basket-maker, aged 20, employed in his occupation, using the sharp-pointed knife in making baskets, run it into his knee, and let out a quantity of the synovial fluid from the joint. A physician, practising as a surgeon, was called in; fomentation, ointment,and bandages were applied; the young man lay in bed five weeks, and the doctor told him he would be a cripple for life, and would not again have the use of the knee-joint. Having employed the father of the young man, and hearing of the case, I sent a carriage for him to my Free Hospital. The knee was immediately steamed, and hot soap and water applied, then all the limb cased, including the foot, in spongio piline, damped with warm water, and dry flannel wrapper over. The object of this moist warmth was to raise the vitality of the limb; and we knew if this could be accomplished, Nature would soon set up a curative process, and we were not disappointed, for by repetition of treatment to the limb and to the whole frame, as follows, the chronic inflammation was soon subdued, and the injured tissue and diseased matter thrown off by crisis from the knee and whole of the leg. The young man has now the perfect use of it, and has for some time worked at his occupation, as formerly. Used baths No. 35½ or 55, or 2, covering the injured limb from the cold water, 42, 13, and 11, 115, 91, 141, 144, 216, 148, 156, 194, 170, 199, 200, 206, 207, 208, or 210. These baths varied each day, being careful not to overpower the strength of the body by too much treatment.

HEAT OF HUMAN BODY.—The total quantity of heat developed in twenty-four hours by a full-grown man in health, is such as would raise sixty pounds weight, or six gallons, of water from the temperature of melting ice to that of boiling water. Since the temperature of the blood remains invariable, it follows that the quantity of heat dissipated by the body in various ways in a given time must be equal to the quantity produced in the same time. The manner in which this loss of heat takes place is, first, by radiation from the surface of the body; secondly, by the contact of air and other external bodies whose temperature is lower than that of the organism; thirdly, by cutaneous and pulmonary evaporation; and fourthly, by the heat imparted to the food and drink, and to the air taken into the lungs, all of which have generally a temperature lower than that of the blood. It is calculated that about three-tenths of this loss of heat is produced by evaporation, as well as by the heat absorbed by food and drink, and that the remaining seven-tenths escapes by radiation and by the contact of external objects.—*Lardner.*

EMETICS.—In Hydropathy practice we never attempt to produce sickness; on the contrary, we endeavour, by our gentle applications, to get the organ to act with vigour to pass its contents in the natural channel, and we withdraw morbid or inflammatory matter principally through the skin; thus the stomach and other alimentary organs are not only left uninjured, but actually strengthened.

WAISTCOATS.—The usual mode of making waistcoats leaves the chest too much exposed; for the armpits and sides of the chest are most tender. A person goes out, buttons inner and outer coat up close, becomes warm with walking, the armpits and sides of chest probably in a more or less state of perspiration; he comes in-doors, throws outer coat off, unbuttons body-coat, and at once admits the cold air to the exposed parts under the arm, stomach, and chest; perspiration is at once checked, without the reactionary effect of our cold water applications, the blood is driven in, and congestion takes place. These may appear to some trivial and unnecessary matters to notice; but when patients come with the mischief done, the very same principles have to be considered and put in practice for their recovery, which, had they been adopted before, would have saved them from the attack. Gentlemen's vests for autumn, winter, and our generally cold springs, should be of cloth, thick for winter, and made to button up to the throat, and with short fine cloth sleeves, about six inches long; these sleeves protect armpits and sides of chest, stomach, and liver; the usefulness of them can only be appreciated by those who have tried them. The absurd fashion of exposing the chest by wearing waistcoats open in front, causes great numbers constantly to suffer from chest affections, and eventually to lose their lives. The usual fashion is to have the legs and arms, and parts of the body where there are no vital organs, and which would take no harm from exposure (as in the case of the kilted Highlanders), carefully guarded from cold. Persons would not like slits in these garments to let in the cold air, but they do not object to have the vest open, allowing the cold air to drive in the blood from the surface of the chest and windpipe, and consequently causing cough. What does the doctor prescribe when cold has been taken in the chest, with bronchitis, or inflammation of the chest? Why, the first thing he thinks of is to cause counter-irritation on the surface by blisters or mercurial ointment, making the chest red with the blood that he wishes to draw away from the congested vessels internally, and which the patient might have done by the most simple natural precautions on change of season, in keeping in warmth on the surface of the chest, and preventing checked perspiration by a more sensible fashion of vests and thicker coats, &c. Thousands go off every season by consumption and bronchitis, from neglect of these simple precautions. Females should also have warm chest and throat clothing, but here again multitudes sacrifice their health and lives to the fashion or mode of the times.

Of all parts of the body requiring protection, none is of such vital importance s the trunk; and all fomentations, compresses, mustard, and other counter-irritants are entirely nugatory and temporary in their effects, if it is not well protected, so as to keep the chest, liver, stomach, and bowels constantly warm. Whatever may be said of the benefit of exposure to harden, none can set the laws of the constitution of the body at defiance with impunity. Labourers and others, who are often exposed in the winter, die by hundreds from bronchitis and consumption, from having laid the foundation of the disease by exposing the chest. I am seldom without such cases in my Free Hospital.

WORKMEN'S SUNDAY CLOTHING.—I have sometimes traced the origin of disease in my Free Hospital patients to their changing their strong week-day clothing for their Sunday apparel of fine broad-cloth and silk vest; or in females, from strong cotton or woollen stuff, and black worsted stockings, to light fancy clothing and thin white cotton stockings. Except in summer, they are particularly liable to cold from this cause, not only from the change of clothing, but from the change from active labour to the quiet of the Sabbath. I could give many cases from my own experience of patients, where a cold taken on the Sabbath, from imprudent change of clothing, has laid the foundation of fatal disease, or has developed constitutional tendencies which have resulted in death.

HEAD AND NOSE will often be kept clear and healthy by drawing up cold or tepid water into the nose every morning on rising.

The following description of Hemorrhoids or Piles is from Hooper :—

" *Structure of Hæmorrhoids.*—Before proceeding to comment upon the details of the foregoing cases, I propose to lay before you some account of what a hæmorrhoid is—a matter upon which some diversity of statement will be found among surgical writers. The subject will be the better understood if the natural disposition of the blood-vessels of the rectum be first examined. This, moreover, will have its use hereafter in other parts of our inquiries; and it is the more necessary we should enter upon the investigation, inasmuch as there is not, so far as I know, an adequate account of the arrangement of the vessels in the intestine itself, to be met with in books of anatomy or surgery.

" The rectum is largely supplied with blood. The vessels as they are seen on its outer side are large, and they send branches at intervals through the muscular coat, which ramify between it and the mucous membrane. Independently of their position as regards the coats of the bowel, the arrangement is not the same throughout the rectum. Over the greater part the arteries and veins, taking both systems of vessels as following the same course, penetrate the muscular coat at short intervals, and at once divide into small branches, which hold a transverse direction, and form a network by their communications with the subdivisions of other similar vessels. Towards the lower end of the bowel, for the length of about five inches, the arrangement is very different. Here the vessels have considerable length, and their direction is longitudinal. Penetrating at different heights, they are directed in parallel lines towards the end of the gut. In their progress downwards they communicate with one another at intervals, and they are still more freely connected near the orifice of the bowel. In this place the arteries all join by transverse branches of good size. The veins form loops, and inosculate with equal freedom.

" The alteration of the veins from which the hæmorrhoidal tumour results, takes place in the loops, which they form inferiorly. As would be expected, the change is progressive. At an early stage, dilatation occurs, which in one part is gradual—fusiform (plate 2). In another it is abrupt, starting suddenly out from the end of the loop into a rounded pouch. A degree of elongation of the looped part accompanies these changes; so that the vessel is lowered beyond its natural level. During these alterations, the dilated vein still circulates fluid blood. In a more advanced stage, the dilatations are still further enlarged, and they are found to contain clotted blood, or fibrinous matter. From the aggregation of veins thus dilated in different ways and in different degrees, loaded also with blood, or one of its elements more or less solidified, the hæmorrhoidal tumour is formed. The rounded masses which fringe the end of the rectum in plates 3 and 4 were soft and pulpy, and they appeared on section to be no more than coagulated blood, which, however, did not escape, and did not admit of being turned out of the general investment, as it would be if the whole were blood. When ravelled out as far as could be done, and inspected with a lens, the swellings were recognised as consisting of veins looped and dilated in the manner before mentioned. They were also found to be an extension of the veins above them, which were themselves enlarged, tortuous and thickened throughout.

Hydropathic Treatment of Piles.—The first point to attend to is to improve the general health, and especially to procure natural action of the bowels. This is done by general treatment, dripping sheets, wet packs, fomentations to the bowels, and the sitz bath, according to the strength, circumstances, and condition of the patient. The sitz bath should be freely used, but not for a long time cold, except in slight cases. We prescribe it fifteen minutes at 70 degrees, and then let down to cold two minutes three times a day. Fomenting pack, as in list 46, is very efficient where there is obstinate constipation, and if this cannot be had, a fomentation, list 64 and 78, hot and cold dripping sheets, No. 2. The wet body bandage should be worn night and day, with flannel wrapper over it in the night, if it is not oppressive; this will soon bring life into the viscera. A 70 degrees sitz bath should be taken before getting into bed, for eight or ten minutes, and be very careful to cover the body over with a blanket whilst using the sitz, to prevent chill. Same in the morning, or cold, before having the dripping sheet or washing sitz. All stimulants and heating condiments must be avoided, and the less flesh meat taken the better. Coffee or tobacco bad. Drink five or six tumblers of water a day, by sips, or more if agreeable. When the long sitz has produced external bleeding, this being a natural effort of cure, then use No. 83, with little water, in sitz or tub, two minutes every two or three hours while bleeding lasts, and then return to the former treatment. (See cut, page 337.)

PILES WHEN CAUSING EXTREME PAIN.—Apply fomenting pad squeezed out of very hot water to the painful part whilst preparing 98; and, after 98, have 144, with 153 same time; afterwards rub over the trunk and legs with tepid wrung-out towel; then well wrap thighs and legs with new flannel strips, and, if to be had, sciatica leg-cases over (see page 96). If a band of damped spongio kept on seat all the better—169 or 171. If no relief first operations, repeat until ease, or the piles bleed freely—48 would do good next day. These severe seizures come on generally from cold, and warmth only will bring vitality to the parts, and remove the congestion. After the severity of the attack is over, these hot applications will not be suitable, as they would relax too much.

SKIN DISEASES.—I have had some desperate cases of this kind. I do not admit any into my establishment, nor allow them to use any of my baths; but they can be treated in lodgings wholly. We had a gentleman with a frightful skin disease in the head, the hair full of scales and scurf, and partially over the face; he had tried a hundred nostrums without relief, and was almost maddened at his state, as he could not go into society, the scurf flying off his head and face on to anything near him. I had no doubt of his recovery as soon as I saw him. I said, the only question was if he would have patience, and give time for a perfect cure to take place. He stayed, had patience, and was perfectly cured; and, as a necessary consequence of the treatment, was thoroughly restored to general vigour of health; treatment to invigorate his general health being at the same time adopted. The hair on the head was first cut close as possible, and a spongio piline skull-cap, wetted three times a day, fitted on and tied under the chin, and made to come well forward. The head was very gently and carefully combed every day, and as much scale got off as possible, and washed twice a day with a strong lather of brown soap-suds. The cure was effected in two months.

In another case, the lower part of the face was attacked; the beard full of scales and scurf, which extended down to the throat and to the whiskers; the lips greatly swollen. Two years' allopathic treatment had been tried in vain. Ointments, caustic, twice salivated, under the idea of purifying the system, by putting nasty minerals into it; and when several eminent practitioners had been baffled in their attempts to give any relief, the last surgeon under whom the poor patient had put himself said he must now try some desperate remedies. The patient must go to a country village, where he could have good air, and he must screw his courage up to the standing point, to bear the operation of having the fungus and scales burnt off entirely with caustic, to eradicate the unnatural growth, which extended from one to two inches in thickness round the jaws, chin, and throat. Just when he had made up his mind to submit to this terrible ordeal, he was advised to come to me for advice. He came, and was entirely cured, and without pain, and without any applications to the diseased part, but damped spongio piline made to fit all over the part, and re-wetted, by sprinkling with warm water three times a day, washing the part with brown soap-suds, and sponging it off with warm water, taking care to keep the spongio as clean as possible, by having two or three sets, and cleansing them. This first operation, as will be seen, was only negative treatment, and to keep the part soothed, and above all cleansed, and preventing the poisonous infectious matter from being re-absorbed. The point to depend upon for the casting off the disease was our universal remedy,—attack the malaise, the disorder in the irritated, inflamed mucous membranes, in the stomach, liver, and bowels. Put plain, natural nutritive aliment into the stomach, raise the vitality of the nerves of nutrition, mildly stimulating them with our nice fomentations and packs, with steam baths and bandages, comforting the liver and bowels by the same plan, determining the contents of the gorged congested blood-vessels in the viscera to the surface, open the seven or eight millions of pores in the skin to let out the waste morbid secretions, which had never been thought of, for the doctor's attention was drawn to cure the chin only. The skin and the stomach, the liver and the bowels, were, however, of near kin to the chin, and would not allow the chin to have the benefit of the scientific operations without sharing in the expected relief. Our mild and natural means, without any claim to scientific practice, very soon brought this patient into a sound state of health, leaving nature, good air and water, with regular hours and cheerful society, the credit of curing;—not cold water, physic, or our science. Various eruptive skin diseases, scorbutic and other kinds, we have cured by the same means, and never failed in a single case; and the vast advantage of a cure by these means is, that the entire frame must necessarily be renewed at the same time, and without any painful or disagreeable operations.* It is marvellously humbling to own one is only a nurse after all, and with one nostrum to cure all,—that treatment which raises the vis vitæ in the ganglionic nervous system. And no physician can cure but by doing this. I have recently had a gentleman, age twenty-five,—tried every means of cure he could hear of,—came to me. I could assure him of a perfect cure; he has been now five weeks, and is nearly well.

I visited a retired physician last year,—one who had been in the highest practice. He said he was formerly called in consultation with another M.D., of longer standing than himself, to the case of the brother of the late Sir Henry Halford, surgeon to the king. The other physician asked my friend what he thought of the case; "Nay," says the latter, "you are my senior, and I wait to have your idea of the case." With a shrug of his shoulders, he said, "I must own it is rather humiliating to confess that the longer I live to practise, the more I see the mischief of drugs. I give bread pills usually, and trust to nature, diet, good air, insist upon quiet, no stimulants, and patience; and, except in very urgent cases of acute disease, or surgical ones, the practice answers best."

ASTHMA.—There are various kinds of this affection, and mostly incurable; but we have often given great and even permanent relief by the following plans. Foment the chest, and then apply half chest spongio piline damped compress, and wear this or a calico chest compress whenever the breathing is difficult; and also wear a wet body bandage occasionally, to keep the stomach and bowels in order, using the sitz bath, but not cold, say 80 degrees, 177 or 178.

Maw's Respirator† will be found of very great service in going out in cold or foggy weather, and may be kept on all night without inconvenience; this is very necessary if the asthmatic subject sleeps in a cold room. Stimulants, tobacco, or much flesh meat aggravate asthma greatly. During a paroxysm, a hot water shallow bath ten minutes, and after a tepid wash down, is very good; or, if shallow cannot be had, 93 or 98, and a sponge over in tepid water. Throat pack very useful. Over-excitement, late hours, irregular living, will aggravate the chronic state of the disease. Warm clothing in winter is essential, if the climate be cold.

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* See "Social Science Review," April, 1863 (Cut and Description of Skin), 2s. 6d.

† Solomon Maw, 11, Aldersgate Street, London. Price 5s., or 5s. 4d. per post.

DROPSY.—The varieties of this disease, and the causes, can only be studied in the works of professional writers on the subject. The ordinary form of dropsy, with the swelling of the whole body, is one we have very successfully treated, when it has not been the result of heart disease; even then life has been prolonged, and ease given up to the moment of death. One such case was that of a female of eighteen years of age, who had been given up by her doctor: he had assiduously attended her, and done everything in his power for her relief, but in vain, and he expected her death every hour. In this state she was removed from her cottage, some distance from our house, to our free hospital, at the risk of dying on the way; but it was her earnest desire, for she greatly dreaded that death she was not prepared for. We began with fomenting her stomach and bowels as she reclined in an easy chair, and steamed the legs; afterwards wiped the body and legs with a towel wrung out of tepid water, then packed the legs with strips of calico wrung out of warm water,—mackintosh strips over, and then flannel to keep in all the warmth possible. Spongio piline damped with warm water to the stomach and bowels when not fomenting; once a day dry rub the legs by two persons. The swelling in the trunk was reduced nearly to the natural size, the appetite returned, and she enjoyed her light dinner on the day she died, which was upwards of three weeks from the time she came. Her departure was without pain, and in perfect assurance of the salvation of her immortal soul. She called for some of her former companions to see and hear what religion could do for the dying. The heart having been irremediably diseased, there was from the first no hope of restoration; but it is no little advantage of our system to give ease of body without clouding the mind with opiates—the only resource of the doctor to relieve dying agonies. Several similar cases in advanced life have been similarly relieved.

The editor of a northern newspaper, about thirty-five years of age, came to me this summer, dropsical, flesh flabby, and so pasty, that I could imprint my finger almost in any part of his person. His medical attendant said he had done all he could for him, and he then (as is usual with the majority of our cases when physic, blisters, setons, &c., have been tried to restore vitality and failed) came to my establishment, and was much surprised and pleased to hear me say his recovery was certain, if he would give me time and obey my directions strictly. I began with gentle fomentations to the stomach and bowels, with tepid dripping sheet after, and also hot and cold sheets; gentle vapour five minutes, followed by shallow bath, 70 degrees; dry rubbing all over by two men, sometimes with, and sometimes without a little dry mustard; then, without washing, replace the wet body and leg bandages—sometimes steamed the legs only; giving an 80 degrees sitz bath for fifteen minutes, and one minute cold—watching the strength, and only giving as much treatment in one day as his low powers could bear. Four or five tumblers of water per day were taken by sips,—wet body bandage was worn night and day; spongio piline at first, as a calico one would not give sufficient heat, but when it would, we substituted calico, which brings out crisis quicker. After three weeks he was covered with crisis, which discharged freely, and on his legs and ankles to such an extent that it ran into his shoes. He was in a pitiable state, and despaired of recovery. I told him I had not the least concern for him, or doubt of his entire restoration from the first, having perfect confidence in our appeal to nature by such natural means. He has long returned to his duties, and has written to me this week, saying he is in perfect health, and has stood the fatigues of a contested election without any inconvenience.

Often the legs are swollen merely from weakness. We see to renovating the stomach, and getting good functionary action of the liver, &c. Pack the legs as No. 214 night and day,—steam them once or twice a day, and pour tepid water over them, and dry well with towel, then dry rub with hand for five or ten minutes, and replace the packings. Every other day give a leg bath to the knees in mustard and water 100 degrees, then wipe with a towel wrung out of cold water, then dry rub with a towel and hand, stroking downwards always in these cases; give little flesh meat, but our usual diet, no stimulants of course. The more we see the invariable response nature makes to these natural appeals, the more confidence we have in our plans. There is nothing punishing—nothing in the treatment the body shrinks from.

HYDROPATHIC APPLICATION IN EXTREME WEAKNESS, AND TO THE DYING.—I shall not forget calling upon a late dear friend, a lady nearly eighty years of age, who was dying from natural exhaustion of the whole frame. Her sufferings were great, simply from the stomach, liver, and bowels being worn out; the vitality and power of action all but gone. Naturally of a healthy constitution, life lingered in the body while there was but a spark to keep the heart moving. On the top of the chest of drawers in the room was a whole row of physic bottles. The doctor, kind and attentive, and celebrated for his skill, had done his utmost to give relief, but was entirely unsuccessful; even morphia, and the most approved sedatives, failed in the usual effect they produced in the earlier stage of the illness. The stomach had lost its heat and vital power to assimilate and dispose of its contents any longer. I advised gentle fomentation at once to the back and front of the body, with one wrung-out flannel pad, covering the pad with a piece of light mackintosh to keep in the heat, as the fomenting-can might be too heavy. This gave immediate relief, and after it had been on twenty minutes it was taken off, and with as little disturbance of the body as possible. The parts were then wiped with a napkin wrung out of warm water, and with another soft dry napkin gently wiped dry, having afterwards a broad, dry, warm flannel bandage to put round the body. Whenever the pain returned, half of a fomenting-can, wrapped in flannel, was put over the stomach and bowels, and if it appeared necessary, fomenting again, but only on the stomach, as in such cases care must be observed not to fatigue the body more than possible. If the legs and feet be wrapped in hot mustard cloths, and dry over to keep them warm, it will be of great service, and then wrap them in dry flannel afterwards. Water is by far the best beverage in these cases, and that all but cold. By these gentle means of keeping warmth over the stomach and bowels, nature will be assisted and soothed to the last. Discard all physic whatever. If the bowels should be swollen or uncomfortable, and constipated for days, then apply a gentle warm-water enema. A large piece of spongio piline, sprinkled with a little hot water, and bound over the stomach and bowels, and kept on with a flannel wrapper, or tied on with tape, will keep in the vitality, and do great service. Castor oil, which is generally considered a simple and harmless medicine, Dr. Quain, in his work on the rectum, says, is irritating from its acrid properties, and he cautions against the use of it. Shortly after I attended the case named, a near relative of mine, a lady, nearly eighty years of age, lay in a similar state, and her gratitude to God for the relief afforded by these natural, harmless means I shall never forget. I have witnessed the same effect on young persons dying. It is simply keeping the vitality up by artificial warmth, when the body no longer possesses it naturally, or can bear stimulating internally, which has such a soothing effect on the sinking frame.

DEAFNESS.—We have succeeded in curing or relieving cases where it has resulted from weakness of the nerves, or low power of the excretory ducts, by using general invigorating treatment, and the use of bath Nos. 134, 135, 136, also 58, 220 in night, and damp spongio all day; the 58 should be applied with the gutta percha steaming pipe, which is supplied with the portable steamer, and is very easily done (see page 259); the ear douche, page 72, should be used gently, with 80 degrees water, directly after steaming; and if in cold weather, a little animal-wool put in ears, moistened with a little olive oil or glycerine, or dry, to keep up the warmth in the ear till the mucous lining is restored. The object of this treatment is to restore the secretion of the healthy waxy mucus; care should be taken to keep the glands under the ear warm till the ear is strong.

TOOTHACHE.—If the teeth be decayed, extraction is the only cure; but if the cause be rheumatism, hold tepid water in the mouth until it begins to grow warm, then change it; at the same time, the face, cheeks, neck, and parts behind the ears should be rubbed vigorously with the hand and cold water, frequently dipping the hands into the water. It is well also to rub the gums till they bleed. Cold foot baths and hand baths will also be found useful, as will packing the face also with wet and dry calico, and plenty of flannel: but it is only wasting time to try any other plan than extraction, if there is decay in the teeth, as the pain keeps up an irritation of the whole nervous system, to the great injury of the health; serious and protracted illness we have often seen to be the result of not having resolution to have the tooth or teeth extracted at once.

SHORT HINTS WORTH NOTICING.—COLD WATER will never cure inflammation or congestion, but will increase them. VITAL HEAT must be brought to a congested or injured part before restoration and nutrition can go on; and this can only be accomplished by warm applications or mustard plasters; cold water will do injury. NATURE WILL HAVE HER OWN TIME in curing. Patients come to us to be cured in a month of maladies that have been years in accumulating mischief in their frames. When a person has a broken limb, they do not go to a doctor and say they must be cured in a fortnight—they know nature will have time to unite the bone, and then throw off in matter the injured tissue, &c.; but in disease, the patient so called is often very impatient, tries first one plan, then another, until the body is a wreck, and painful dissolution sets the fretful soul free from the body, to enter another state of existence. Weakly and ailing dyspeptics very generally keep up their ailments by eating too much. When the stomach or other nutritive organs are weak, it is a manifest absurdity to give them as much to do as when healthy and strong; a little well digested will keep up strength, when a little excess only deprives the stomach of power to digest at all.

Oxygen, common Colds, and Respirators.—We find the use of Maw's respirators of very essential benefit, not only in cases of bronchial and lung complaints, but also in all cases of debility, and even in healthy persons exposed to cold. Their use during the night, we often see, greatly relieve the throat and lungs, and never debilitate, however much used. I can speak personally to the benefit of using one in winter whenever I go out, although I am in perfect health and free from chest affections or any disease; and the cause of the benefit will be explained in the following quotation from Dr. Joel Shew, there showing that the respirator, by modifying the cold received into the lungs, acts as a preventative of too great stimulus; it has only to be tried to prove the soundness of this theory:—"A satisfactory explanation of the essential nature or proximate cause of a *common cold* has never been given. Liebig's theory of a mutual and equal resistance between the vital force and destructive force of oxygen explains it clearly. What are the symptoms of an ordinary cold? Defluxion from the nose, sore throat, hoarseness, cough, sneezing, and a sense of soreness over the whole surface of the body. What are the parts affected by these symptoms? The Schneiderian membrane lining the nose, the parts of the throat near the root of the tongue, the air-passages leading to the lungs, and the skin. Why are these parts, in especial, first affected, when a man has taken cold, in preference to others? Because these are the parts of the body with which the oxygen of the air must necessarily come in contact before it can possibly enter the body so as to reach the internal organs. It happens thus: a continued stream of cold air, or continued exposure to wet, *while the body is inactive*, or excessive fatigue, or any other *debilitating cause*, first lowers the tone and diminishes the resistance of the vital force throughout the whole body, thus giving a preponderance to the action of oxygen over the resistance offered by the vital force. And as the oxygen must first come in contact with the skin, nostrils, throat, and air-passages leading to the lungs, before it can reach the internal organs (these being the inlets by which alone it can gain admission within the citadel), are, therefore, precisely the parts on which, if Liebig's theory be true, its destructive agency *ought* first to be exerted; and these *are* the parts on which it *is* first exerted, and inflammation of these parts *ought* to be the first manifestation of an undue intensity in the action of oxygen; and inflammation of these parts *is* the first manifestation of that undue intensity. If the effect of the debilitating causes in lessening the resistance of the vital force have not been very great, then the *vis medicatrix naturæ*, or restorative principle, will restore the equilibrium between the resisting energy of the vital force and the destructive influence of oxygen, and thus remedy the mischief in a few days. But if the vital force have been greatly depressed, then the destructive agency of oxygen will be further manifested in the more internal organs, and fever, rheumatism, or inflammation of some deep-seated organ will be the consequence, before the restorative principle has had time to perform its task of restoring the equilibrium. Nothing can more clearly illustrate Liebig's theory of disease than the phenomena of a common cold."

Case L. Gentleman, age 54, tall, good constitution, good habits; when about 30, had inflammation of the bowels, and took a great deal of calomel; bowels always weak since, and liver affected. Home, on rising, summer 83 five minutes, then 95, or 2 and 164; 172 in night. Noon, 83 five minutes, with or without 112. Bed-time, 92 once a week, once 98, other nights 83 five minutes; 46 at eight p.m., when stomach deranged; 61 occasionally; 130 twice per week; 128½ at morning bath, and also 13 twice or thrice per week; 13 and 10 at bed-time, if fatigued aud 165. Diet as advised in this book.

Case N. Injured knee by a blow on board ship; aged 20. On rising, No. 2, or 21·73½, or 16·73½, taking care injured limb is kept from cold water; forenoon, 143, and afternoon also; 59 twice per week; other days, 2, or 112, feet in hot mustard, or 120, or 121, or 16; 168¼ in day, 172 over night dress, 153; 214, with plenty of flannel wrapped over knee, night and day. Crisis came on, the knee suppurated as it had done before, and, shortly, several pieces of decayed bone came out. Continued treatment until matter ceased running; then dress leg with crisis, calico, and flannel; then have 21·73¼; on rising, 59, once a week; forenoon and afternoon, 147, two hours each time, with 153; bed-time, 147, with some hot water by bedside to use in night when awake; soon as heat is subdued in knee and leg, put on silk stocking, and keep it damp with warm water, and put dry merino or other stocking over silk. This case was thoroughly cured.

Sitz Bath sometimes injurious.—Cold sitz bath, taken for a long time at once, is sometimes the cause of much injury. I never order a cold sitz bath above six or eight minutes, and generally four or five minutes. I have known congestion of the testicles and a state brought on that would have resulted in tumour, had the subjects not come in time to have the mischief remedied by our warm treatment. Long cold sits will often cause swelling of the glands in the groin; and in females, congestion of the womb or the ovaries, and bring on ovarian disease.

Head Pack for Nervous Headache.—Take a strip of flannel, about four inches wide, long enough to go twice round head; squeeze half of it out of *hot* water, and let the other half be dry to bind over the wet; then put on the skull cap (see list No. 215), squeezed out of cold water, and kept renewing both of the above till pain is gone. 131.

Nervous Case.—Captain, age 35. Great hardships at sea, long watching, and anxiety; slight frame, healthy, temperate; no organic disease, stomach greatly weakened; sleeplessness. On rising 130½ with warm water, then 25, and re-damp compresses 188, 178, 169, with warm water. Every forenoon 59, with 137 and 180, holding warm pad to bowels till begin to sweat, then use 13 with suds, then 31, and whilst in 31 two attendants rub well, and dry rub as 19½; then dress and 77. Head pack as above. When crisis fully out use treatment for liver disease, page 430.

Toe-nails grown in are often a cause of disease, not easily cured by the ordinary means used. We find them soon cured by steeping first in hot soap-suds twenty minutes; then cut the corner off the nail, and keep the end of the nail cut square. Put on a bit of wet linen and oil-silk while any inflammation.

Case of Injured Thumb.—A gardener, aged 50, bruised his thumb, and went on with his work, thinking it would soon be well. In loading some gravel from the lead mines, got his thumb venomed, and after a day or two felt great pain, and swelling took place; he then applied to a surgeon, who ordered poultices and some pills; the hand began to be very painful, and the surgeon supposing there was matter forming near the bone, and the skin of the man's hand being hardened by his employment, that the matter could not escape, made an incision to the bone, but no matter came out, the inflammation and pain increasing. This went on for two months, the same surgeon telling the man his thumb would never be of any more service, and that the probability was it must be cut off; and, eventually, he might lose his hand. The man, in great pain, and fearing an operation, came to us; he had relief in two hours after coming into the hospital: all pain ceased, and he had none afterwards; the skin of his hand and arm, from his occupation, was hardened; no means had been used to make use of the thousands of pores in the skin to give relief; the only vent for morbid matter was through the injured thumb, which had been poulticed; no attention had been paid to improve the general health, except by pills; the great outlets for impurities provided in the seven or eight millions of pores in the skin was not thought of; all the attention of the surgeon was directed to cure the thumb, without reference to the other parts of the body, which, of course, all sympathise with every part diseased.

The treatment was as follows:—the case went on well from the hour it was commenced, and the shapeless mass of inflamed matter, which the thumb appeared to be, on commencing, soon assumed a natural form; and, from being quite stiff, in two days he was able to bend it without any pain. Treatment ordered:—This evening, put the hand and arm into hot soap-suds, for two hours, without rubbing or sponging it, and after wrap the hand in a flannel pad, wrung out of hot water, and plenty of dry flannel over to keep in the warmth; then the whole arm bandaged as No. 214, then No. 35½, keeping the arm in the bandages, and after put on 180; the whole nervous system being so shattered. Then had some tea, and went to bed, and slept well for the first time of five or six weeks, during which time he had scarcely slept an hour, and then in a disturbed state, holding his hand out of bed to ease the severe pain; the next eight days he had the following treatment:—On rising, 96, 97; forenoon, 108; afternoon, 128, and 123; once a week, 55. Attention to 77, 180, 208, 237. Treatment for hand:—Keep it in hot soap suds, two hours three times per day, and the intervening time, keep it wrapped in flannel pads, wrung out of hot water, and dry flannel over. Two pieces of decayed bone came out during the process; we let nature cast them out, and never interfered, even when the pieces of bone protruded: had we cut them out, inflammation would have again come on. Here it was striking to see what powerful efforts nature makes in restoration. The man is now at work.

MURDEROUS EFFECT OF LEGAL PRACTICE.

The following case fully illustrates the usual method of attempting to destroy disease by destroying the vital functions of the body, and which such men as Dr. Beale, as quoted page 32*b* of this work, advocate. The writer came to us a wreck. He had in the first place simple sciatica; previously was one of the strongest, healthiest men; age 45; had always been a very temperate man; and it is shocking to see the strongest frames brought to misery and ruin by the legal practice. If such practice as was adopted in this case ever cured, there would be some justification for trying the barbarous tortures; but when, as Dr. Anstie says, some of the faculty have now come to the conclusion that deficiency of vitality is disease, it is clearly impossible by war against the very life of the body to cure disease, nor does such practice ever cure. We often return home from our consulting rooms at the Hydropathic Establishment, wearied and distressed, after having heard the tale of poor wrecks of humanity who have been ruined by the legal setons, issues, caustics, purges, vomits, strychnine, calomel, &c. &c. The writer of the following letter began with simple rheumatism in the sciatic nerve, the result of simple cold and indigestion; and by the elaborate scientific, but authorised practice, was brought to a state almost worse than death. After the first attempts at cure by blisters and purgatives, which of course further reduced the already deficient vitality, stronger measures, as usual, were adopted in the form of issues, the injection of morphia, by means of a sharp tube, &c.; these not curing or relieving, but aggravating the disease, strychnine was tried, which caused strong spasmodic action of the muscles of the legs, doubling the legs up; and when he came to us, it took two bath men to separate the legs, while fomenting pads were applied.

He returned home greatly improved in every respect, and is progressing well at home.

"Dublin, Oct. 25th, 1861.

"Jno. Smedley, Esq.

"My dear Sir,—Allow me to return you my very sincere thanks for your kind letter of the 27th ult., accompanied by your invaluable books. I have been treating myself since the 2nd inst. with your wet body bandage, renewed three times each day, with No. 98 bath at bed-time. I must say it has had the greatest success in relieving my bowels daily. This is what none of the doctors in Dublin could do under six or seven days, taking medicine daily. I may add, that my bladder is greatly improved, as the water comes away quite natural on some occasions, and at other times I cannot retain it; however, I have still to use the catheter.

"At your request, I beg to give you a short history of my case. About two years past I had pains and soreness over my loins, which made me walk a little lame and stiff. I then consulted the late Surgeon ——, of this city, who prescribed for me for several months, without any good effect. I had Turkish baths and salt hot water baths, under his advice. In the months of August and September, 1860, I was at the baths at Merrion, near here, for five weeks, taking vapour hot and cold baths three times a day. However, I was gradually getting worse, when, on the 1st of October, 1860, I left the baths, and put myself under Dr. ——, being then almost unable to walk. He gave me medicine and put me to bed, where I remained for five or six weeks, being visited two or three times a day by the doctor, under blisters, and injecting some stuff on my nerves, by a needle or tube inserted for one and a half inches in my thigh and over my loins, until I was almost blind from the effects. He then burned me on both sides of my right leg, from the hip down to the foot (the pain was chiefly in this leg); he also burned me down the back, both sides of the spine, from the neck to the extreme part—this was very severe, and discharged much, but without any good effect. Dr. —— then called in the late Dr. ——, who pronounced my case hopeless, and said I could not live many days, but ordered more blisters. Dr. —— gave me a small bottle of medicine, which abated the pains. I had two pea issues put in at the lower part of my spine, but I did not keep them in long; and on the 11th of December, 1860, he ordered me to change my residence to Sandy Mount, on the sea shore, where I rapidly recovered my bodily health, which was always good. I may say I had no power of my legs from the first blisters, which affected my kidneys and lower bowels; I think they were less or more paralysed, and would not act without purgatives, as I have stated above, until I was directed by the Allwise and Merciful God to your book. I was in Buxton, during the months of July and August, under the doctors and baths, where I got no relief, and suffered much from constipation of the bowels, being six and seven days without any relief (inclosed the doctor's prescription). I returned home on the 31st August. I am still unable to stand or walk, my legs being set at a sitting posture, except sometimes they move out and in from nervous twitchings. There is still a good deal of twitching pains with heat in my legs, and they press very much against each other, with a tendency to cross. My general health and strength is good; I have been told that I look better than I have done for many years.

"My dear sir, I hope you will pardon this long account of my case, as I look to you to advise me what I am to do; trusting, under the providence of God, you may be the means of restoring me to the use of my legs, which will be a great blessing to me and my young and helpless family.

"I remain, very truly, your obedient servant,

"A. G——."

ANOTHER MURDEROUS CASE.—We could easily fill a large volume with descriptions of cases similar to the foregoing one and the following; and when we come to the conclusion of our life's labours, we shall reflect with pleasure on having saved thousands of our fellow-creatures, at home and in foreign countries, from torture, ruin, and death; and the caution against anti-vital practice will be transmitted to generations to come.

A LADY, AGE 18, suffered a good deal from the ordinary ailments of young females, and the usual applications were prescribed, of purgatives to "regulate," or rather subdue the vitality in the bowels, blisters to the bottom of the back; this was the commencement of many years of misery and ultimate ruin—the blisters aggravating the periodical sufferings, and causing intense pain in the head as well as the back, which was a natural and certain consequence. To relieve the sufferings in the head, which often caused insensibility, a seton was set in at the top of the spine for nineteen months, producing convulsions, which came on frequently and became established epilepsy. As a last resource, an eminent physician ordered two issues to be set in the top of the head; two scarlet French beans, steeped in caustic, were inserted in the scalp, and bound in with bandages over the head and under the jaws, and in this miserable state she was fed with a spoon, being unable to use her jaws. In addition to all these tortures, this single lady was subjected to internal applications of the most painful and disagreeable kind.

The lady's friends, after years of these applications, would not consent to any more of the legal remedies, and sent her to us; but all that could be done was to improve her general health. The epilepsy could not be cured or relieved, and death only will terminate her sufferings. The case, in the first instance, was one of very simple natural deranged functionary action; and as the lady had a good constitution and no tendencies to disease, either slight natural treatment, or—as a late eminent physician did often—have left her to nature and rest, she might now have been performing her allotted part in life, useful and healthy.

OUR HYDROPATHIC CASES.

Case.—A gentleman, age 40, in great excitement of brain and whole nervous system from over attention to business and taking stimulants to keep up his spirits, tried physic and the physician's advice until he was all but mad with excitement, memory impaired, and quite incapacitated for any business. Such are the cases come to us who have had no medical education, and they get well. This case baffled the legal faculty, and no expense was spared by the patient to get the help of the highest medical authorities in London. Nature was worn down, and would not bear the forcing treatment of the faculty—purgatives, tonics, narcotics, blisters, &c. &c. He soon began to feel relieved under the following simple, but natural, treatment, and will soon be restored to health, and what is more important, will be taught how to retain his health and meet any casual illness from colds, &c., which we are all liable to. Such cases require the most delicate treatment not to shock the nervous system, but with a view to aid nutrition. On rising, 105½ and 132; then dress and take 76 with 153, and 153¼ on palms of hands, 220 on nape of neck, and 215½ with vinegar, all with 76; repeat this forenoon and twice in afternoon; 13½ twice per week in forenoon instead of the 76, &c.; at bod-time 220 over stomach under 169, and the 220 on nape of neck in night; also 215½ in night. The first night this gave sleep. Continued this treatment until stronger to bear a little more general treatment. As strength returns, go on using home treatment (page 6.).

Case of Long-standing Chronic Rheumatism in Knees.—Gentleman, age 35, both knees greatly enlarged and crippled. This case first under surgeons, and by the use of the usual blisters, ointment, purgatives, &c. &c., was brought into helpless state, and the liver and stomach greatly disordered. Went then to a cold water establishment, where they spouted cold water on the knees, trying to get vitality where little existed, and so overpowering the little left; then iodine and general cold water treatment; but from all the allopathic treatment, and the cold water not being calculated to aid the work of nutrition, the patient got worse, and came to us. First his knees 220, and legs in dry spongio. Then liver and stomach treatment and 165, 172. Knees after a time began to discharge fetid matter for months, reducing the knees to their natural size, and taking away the hard swelling which extended up the thighs. When the discharge from the knees had ceased and the effusion of lymph absorbed, then used dry wash-leather, damping it in any part that adhered, wearing wash-leather till the old skin had peeled off and the new skin sound; then continued dry wash-leather for a long period, until vitality got into the knees.

Cut of Hand.—Gentleman, age 40, two rather severe cuts; health not good at the time. When the accident occurred, the fingers were bound up and put salve on, then showed it to the surgeon, who thought the bone was injured, ordered poppy fomentation, but spoke lightly of it. The arm, however, began to swell, and the arm painful, preventing sleep. In this state came to us, and as we saw it was a case in which lock-jaw might come on at any hour, we did not like to leave the case, but undertook it; and it was soon seen how Nature responds to the principle of doing nothing but what aids her work of nutrition. First the hand and arm was put in hot soap-suds, No. 150½ in list; then Nos. 47, 165, 172, 214 to arm, and packed the hand in linseed poultice, with dry spongio over or wash-leather; next morning 150½ to hand, night and morning, 47 in forenoon, 93 afternoon; continued this four or five days; then 46, 141 in forenoon, and continued the other treatment, nothing but revalenta diet for five days, then a mutton chop once a day. As the skin of the injured part rose, gradually cut it away, to allow the irritating matter to come away; this continued, and as the hand healed, used damp wash-leather until well, and giving home treatment, page 6, keeping the poultice on till all matter is removed, and all pain gone. This case was quite cured in a month, and the general health established.

Case.—Gentleman, age 55, overworked merchant; rheumatic fever four years since, from exhaustion, which—as almost invariably the case under the legal treatment—settled in the heart. When he came, had very inflammatory symptoms, pulse extremely irregular, and in a state of great prostration. Here the vital powers were brought down as low as possible for life to exist. The tonics, sedatives, &c. &c., and good living had worked their effects, and thos effects were such as to compel him to give up business, and be prostrated in hi room, with nothing but darkness before him as to his future bodily comfort. I is strange such cases should be successfully treated out of the qualified profession. We do not like to throw a fellow-creature's chance of life away; but the feeling of responsibility, and the anxiety attending such cases, often make us almost as bad as the patient, causing many a sleepless night. In this case, began in February with 26½, at 7 a.m., keeping the patient in bed; forenoon, 50, 141, 153½, or 50, 142, 153½, or 50, 143, 153½; No. 10 after this operation, keeping in bed; afternoon, arms in 150½, and also legs; at night, at 9 p.m., 26½, 153¼ on stomach as often as skin would bear; 223 when feverish; 13¾ once or twice per week; keeping in bed in an airy, well-ventilated room on the top of our lofty house, room warmed with steam piping, bandages 178, 188, 165, 172; damped leather to legs and arms; covered with flannel, 153¼ occasionally; afterwards 104, 92, 26, with vinegar successively. Diet—Revalenta, jelly, cocoa, toast, barley water.

Dr. Russell, the celebrated *Times* correspondent, gives a striking illustration of the anti-vital treatment Dr. Beale so strongly advocates by blisters, &c. At page 399 of Dr. Russell's "Diary in India," he states how he was severely kicked on the thigh by a horse, of course crushing the muscles, veins, and nerves, consequently stopping the free circulation of blood and stagnating nature's action in the part. Now, what was the scientific practice of the legally-authorised doctors? Why, it will be seen, the first measures to attempt to revivify the injured part were, to apply means that further reduced the vital energy of the part, cutting the very ground from under the inherent natural powers of restoration by the application of blisters, belladonna, &c. One doctor, in desperation, ordered it to be "*sluiced with cold water, to the great increase of my sufferings;*" and no wonder—cold water would only further paralyse Nature's efforts. Then, he says, "*more blisters, pain, and great heat;*" and this continued for many months. Now, compare this treatment with our remedies (see Wounds and Bruises) and the case preceding. It is strange that such a course should be persisted in, which never cures; nor is it possible so long as the integrity and health of the body depends on nervous vitality. A few fomentations, poultices, and spongio piline, combined with some good soap washings over the whole, and a dripping sheet once or twice per day, abstinence from all stimulants, tobacco, and animal food, would probably have cured him in a short time. After months of suffering, another doctor comes in, and is "*rather puzzled with the case*" (page 94, vol. ii.). "*The lameness increasing, head confused and queer;*" and no wonder, after such exhausting remedies, and nothing to comfort the injured part. When Mr. Russell gets to the hills he still suffers greatly, but the doctor then orders little animal food and plenty of fresh air, and under Nature's care he rises again; but the limb is not cured, and so he will find it as he gets older or is exposed to cold or hardships.—See our Bath List, 146½.

Dr. Russell came in for a share of official treatment, and like many he names did not find it either agreeable or efficient, except for punishment.

SPLEEN.—The spleen, or milt, is a spongy viscus of a livid colour, and so variable in form, situation, and magnitude that it is hard to determine either. Nevertheless, in a healthy man, it is always placed on the left side, in the left hypochondrium, between the eleventh and twelfth false ribs. Its circumference is oblong and round, resembling an oval figure. It is larger, to speak generally, when the stomach is empty, and smaller when it is compressed or evacuated by a full stomach. It is connected with the following parts:—1. With the stomach, by a ligament and short vessels. 2. With the omentum and the left kidney, 3. With the diaphragm, by a portion of the peritonæum. 4. With the beginning of the pancreas, by vessels. 5. With the colon, by a ligament. In man, the spleen is covered with one simple, firm membrane, arising from the peritonæum, which adheres to the spleen very firmly by the intervention of cellular structure. The vessels of the spleen are the splenic artery coming from the cæliac artery, which, considering the size of the spleen, is much larger than is requisite for the mere nutrition of it. This goes, by serpentine movements, out of its course, over the pancreas and behind the stomach, and, after having given off branches to the adjacent parts, it is inserted into the concave surface of the spleen. It is afterwards divided into smaller branches, which are again divided into others yet smaller, delivering their blood immediately to the veins, but emiting it nowhere else. The veins, at length, come together into one, called the splenic vein; and having received the larger coronary vein of the stomach, besides others, it constitutes the left principal branch of the vena portæ. The use of the spleen has not hitherto been determined; yet, if its situation and fabric be regarded, one would imagine its use to consist chiefly in affording some assistance to the stomach during the progress of digestion. (See page 360.)

Case.—A man, stricture, and stoppage of urine. You want a sitz bath, mackintosh sheet, sitz bath blanket, sponge, two silk and calico body bandages, No. 163; two ditto, 169 (see page vi., Home treatment); two fomenting pads, and one fomenting-can—all or any of these we can send you if you wish; stewed apples, as in my book, good for you, with milk; use No. 115 at first, for two or three minutes, then longer, twice a day, in your bed-room, with a fire in this cold weather; 69 or 70 when retention of urine; pads low down abdomen, and also 98; use 169, or 163¼ night and day, with 172 over, in night. 98 once or twice per week, at bed-time, if retention of urine; if not, use 115 two or three minutes; 96 every morning, on rising, with sponge full of cold over shoulders and spine; 157 every night, and bed-time, with dry socks to sleep in. No tea or coffee, or any stimulants; cocoa from nibs, or milk best. The less flesh meat the better; be very careful of being exposed to cold this severe weather, and use cane-bottom chairs or wood; 157 once in the day, or 159, good. No purgatives or diuretics under any circumstances.

CASE E. CONGESTION OF THE TESTICLE and spermatic cord, probably caused by long cold sitz the patient had taken formerly contrary to prescription, but feeling the sitz after a time comfortable, continued in it. After a few weeks, slight swelling came on, but no notice taken of it; became troublesome; applied to a surgeon; ordered a suspender; used iodine and various attempts at remedy—still the enlargement went on till it became exceedingly painful. Applied to a homœopathic doctor; still all attempted internal and external remedies useless in stopping the increasing enlargement. Came to our establishment. Treatment to commence with as follows, which gave ease immediately—softened and reduced the congested parts; have no doubt will soon effect a cure:—On rising, first day, 115, 13, 11; second morning, 115, 16; third, 115, 16. Forenoon, first day, 144, with small foment pad before and behind, not down the thigh, and after have 115 three minutes; then 159. Second forenoon, same; third, ditto; afternoon, as forenoon; 106 with hot soap-suds. The part cased in spongio or water dressing, kept damp; worn night and day; 127 twice per day; 61½ once a week. Diet, 210. White bread poultice the part all night; if can make it comfortable; 199 to the part affected also useful.

CASE Y.—Gentleman, aged 40; injured arm ten years ago; after being apparently well, still weaker than the other. Going through some severe hardships, the place became inflamed and broke out; after some time some decayed bone came away, and then healed, but whenever any pressure on arm it became painful and weak; general health good. Treatment first fortnight: On rising 95, keeping cold from arm. Second morning, 13, 130, 95. Third as first. Forenoon, first day, arm in hot water-suds an hour and a half, then dress the sore as 151, and put a piece Spongio over and quite round that part of the arm, damped, flannel over the rest of arm; apply 214, including hand; the 214 must only be removed every forenoon, but the 151 must be attended to morning, noon, and night, and, every time, the discharge gently washed away; after the arm dressing have 111 three minutes, 16, 25, and afternoon, 83 five minutes, and 159. If arm does not keep up a good reaction, have hot foment pack to it one hour, and then crisis poultice 220 and 61½ once per week. Returned home cured.

CASE OF CUT IN THE HAND, AND PROPOSED AMPUTATION.—A patient applied to us in much distress of mind and body at the prospect of a surgical operation on his hand. He had several weeks before accidentally cut his hand, and one finger severely, with a rusty turnip-chopper. He sent for his surgeon, the hand was dressed, and an attempt made to cure it. The usual routine of surgical treatment was applied; ointments, cooling lotions, and calomel to stimulate the liver and to cleanse the bowels. The finger, however, as the patient remarked, took bad ways; the inflammation and pain became so intense that he could not sleep, and had not retired to rest for nearly a week; and had he not, at a friend's suggestion, wet packed the arm, the erysipelas which had set in would have destroyed him very soon. A longer and deeper incision was now made in the finger, laying it open to the bone, to allow the matter to come out,—this gave no relief; the place soon showed signs of bad matter and more inflammation; it would not heal, nor give any appearance of healthy granulations forming. The surgeon said he could not hesitate longer to call in further assistance, and with another surgeon in extensive practice, they again examined the finger, and came to the conclusion that amputation would alone save his life. The instruments were produced, but the patient's courage failed,—he declined to submit to it, and applied to us. Now it was evident on a glance at the subject, why these really skilful surgeons had failed to cure the finger without an operation, which, even if performed, would have left the patient in the same critical position. The state of the whole system was thoroughly deranged; the tongue foul, complexion yellow, bowels in an unnatural state, head bad, and nausea, all showing the blood utterly unfit to repair the damages in the frame. This impure inflammatory blood kept up especial irritation and inflammation in the wounded part. The bowels and finger had been attended to; good living and stimulants advised, but this of course only added fuel to the fire. The hand, as in the case of the burn quoted below, was a secondary object with us, and not thought of as the point to cure. We set to work by first immersing the hand in water daily as hot as could be borne for twenty minutes, then, while in the water, the morbid core of the wound was raised with a pair of fine pincers and cut off as it could be borne. The pain was severe. Soon as this operation was over, the whole hand was packed in spongio piline, and the arm to the shoulder wet packed with calico, mackintosh, and flannel. This was repeated only once a day, except it became painful, when the hot water was re-applied, and the packing replaced, but this was seldom required, for the arm was at once relieved, and he went to bed and rested the first night. The relief was not altogether owing to the treatment of the hand and arm, he had before every dressing a hot shallow and tepid wash down, or a steamer or a wet pack. The wet body-bandage was worn night and day; all stimulants, flesh meat, or tea strictly forbidden. Light puddings, bread and butter, and water, or weak cocoa, were his diet.

The patient was not confined to his house three days after this treatment, and soon got well. The hand was cured, with the exception of a stiff joint caused by the application of the knife to the tendons.

CASE OF BURN.—A workman in my employ was foolishly melting some bees' wax in turpentine in a tin vessel over the fire, the mixture burst into a flame, and in attempting to remove it, the handle broke off the pan, and the whole contents—a stream of liquid fire—ran over on to his hand. The skin over the whole hand was completely charred, inside and out. The surgeon was immediately called in. The messenger having informed him of the nature of the accident, he brought with him a sedative draught, and administered it at once, saying it would compose the sufferer and give him sleep. He examined the hand, and applied some ointment with a feather, and a covering of linen, then a poultice, and covered the whole up. The sedative draught was repeated several times during the night, and the patient had, according to his own statement, several "dosing bouts," but awoke with alternate fits of heat and shivering. The surgeon was very attentive, came several times during the day, and re-dressed the wound, and repeated this the following day; at the same time expressing his fear of mortification, and consequent necessity for amputation. The accident occurred on Thursday evening, and the surgeon attended until Sunday evening. I only heard of the accident on Monday morning, and the surgeon's opinion that there was but slight hope of saving the hand. I immediately sent a close carriage for the patient to our free hospital, taking all the risk without hesitation, and with his entire consent. Soon as he arrived, the bandages and poultices were removed, the ointment carefully washed off by sponging, squeezing the warm water over without touching the parts with the sponge. A tea-kettle full of boiling water was thus used; there was no feeling in the hand, the skin was charred, stiff, and cracked, the fingers all in a fast mass. When the hot water was being poured on, the fingers began to twitch, to the great joy of the man; the hand and arm were then steamed twenty minutes. It was remarkable to see some of the turpentine coming out, which had been kept in by the doctor's ointment, and, of course, a source of great irritation. After steaming, packed the hand and arm with wet linen and dry flannel and shawls, and now the hand was soothed, and the irritating matter removed, he rested three hours. The next and principal point to see to, was to raise the vis vitæ or power of life; the nervous system had received a severe shock, deranging the digestive organs, making the man sick and faint. After the dressing of the hand, he was undressed except the arm, and put into our steam-box, and a gentle steamer given; the effects of this revived the whole frame, and was most grateful to the distracted nerves. After the steaming, he had a tepid dripping sheet, then was well dried with a sheet in preference to a wash down, to prevent exposure to the air, then a wet body bandage was put on, and he was dressed. The patient got sound sleep the same night, without any physic or artificial means; this soothing treatment was very effective in giving immediate relief. (See 147, 20.)

The next day the hand was steamed three times and re-packed. The man could not stand without help when he came, but this day he walked out alone, and had a wet pack No. 46 in list, in which he went to sleep. The third day the skin was partially ready for removal, it was white, sodden, and soft, and was cut away day by day, until it was all removed, and left the new skin forming underneath. Offensive matter dropt out as the burnt skin was removed, and with it some remains of bees' wax and turpentine. The fingers were now set quite at liberty. General treatment was continued to improve the general health and keep the body cool; the body bandage re-wetted often night and day, kept the bowels right, with a 70 degrees sitz bath for ten minutes twice a day. A glove of spongio piline was now made, with fingers to fit each to keep them separate; this was kept on and damped night and day, except when removed to steam the arm three times a day. The arm was kept packed with wet and dry calico and mackintosh. A vapour bath to the whole body and a tepid sheet were given every morning before breakfast. There was not the least relapse; in fact the man returned home in a fortnight cured, but the tender new skin would not allow him yet to work. The hand, if at all cold, would contract and be fast again; this, however, disappeared as more life got into the part. The steaming to the arm in this state was as strong as he could possibly bear. Pieces of whalebone were fitted over the glove on the inside of the hand to keep it open and prevent contraction for about a fortnight. The man got to his manual labour in two months, and has now the perfect use of his hand, and there is no scar whatever left.

This again is only being a nurse to nature, not forcing her or dictating to her by unnatural operations. No stimulants were allowed, or a grain of medicine.

OLD INJURIES OR WOUNDS FROM BROKEN OR DISLOCATED LIMBS, OR HUMOURS.—The effect of the Hydropathic treatment in restoring parts which have been formerly injured is very striking, and shows the sound principles on which it is based. It is an ordinarily admitted axiom in the medical profession, that the quicker the tissue of the body is replaced, the more healthy and vigorous it will be; and that the new healthy tissue thus formed will not bear the presence of effete or morbid matter, but will quickly expel it. We have had a number of striking cases of this description. In the case of a lady, whose arm had been broken four years before, and which had been weak ever since, although apparently restored, a crisis came out after a week's bathing on the very part where the fracture had occurred. This crisis discharged, then threw off scaly eruption, got well, and the arm was restored to its normal vigour. At the same time (as a matter of course, and, in fact, the cause of the restoration of the arm) the whole frame was invigorated.

Another case of a gentleman with sprain of the ankle joint of years' standing, and which, as usual, had been treated as a local ailment, it being bearable and useable, and, therefore, left to be cured by time, as the heating lotions and blisters did not appear to strengthen it. In a few weeks after he had adopted our treatment for his general health, his ankle became swollen and inflamed, and then began to suppurate; his appetite improved, and his spirits raised, with a new feeling of comfort in all his frame, except the suffering part under process of renewal. This cheered him and gave him confidence until his restoration was completed. This is natural cure; not the effect of science, but simply studying and following nature's laws in keeping the pores of the skin open, cleansed, and healthily stimulating the suffering member by artificial warmth, cleansing away the morbid matter as it exudes, so as not to allow it to be offensive to the new granulations forming; attention to plain simple food, good air, and good water, following nature's hints, not forcing her to submit to man's ideas of what results his pharmacopœia and materia medica practice ought to produce. No, nature will not be dictated to; she has secrets in her laboratories (the glands, &c.) where she forms the delicate compounds man cannot imitate. He is sure to put in too much of one thing or another, or not the right material at all. He aims by mixing up tonics and purgatives, sedatives and stimulants, to hit the mark, but always fails in giving nutrition with the nasty stuff he administers. Our custard puddings, roast beef, and forest mutton distance the utmost stretch of his genius, with the London Pharmacopœia and Materia Medica to boot. (See case Y, p. 167.)

The advantage of a proper use of Hydropathic treatment is shown by the effects it produces in other parts of the frame, except where vital injuries have been sustained by bleeding, setons, physic,

&c., and even in these cases a great deal can be done to prolong life and make it more comfortable, and the body more efficient; this is a great boon to the sufferer. By the other principle of practice, there is no chance of a radical cure being effected. I could give a large number of cases of injuries being thus cured or relieved, and I have always such cases in my establishment. An elderly gentleman, a member of the Society of Friends, recently returned home cured. He came to my establishment quite broken down, the lower part of the legs dark and inflamed, and an issue set, from which exuded offensive matter to such a degree, that he was offensive to himself, and it banished him from the social meetings of his friends. The doctors told him the offensive matter was the safety-valve for the preservation of his life, and if stopped, he would be in danger of death. And believing the doctors' prophecies true as to the direful consequence of the discharge ceasing, he made up his mind to have his legs discharging stinking matter for the rest of his life. When I told him the discharge would not only be stopped, but his health would be renewed, and the legs made whole and fit for company with any healthy legs, he was incredulous. "No, friend," said he, "I know thy good-will, but if these holes are stopped, the consequence may be serious." I said, if you keep a tap in the cask constantly dripping, the contents will in time all run out; and thus with the body. If such holes are not stopped, it will lose all its vitality; we do not turn out such bungling work. Wait and see the effect of our water, our air, our puddings, our lamb and peas, our chickens and rabbits, our stewed fruits, and plenty of cream and new milk, our pure brown and white bread, and the cheerful, happy, sympathising society of the establishment. He did wait; he gave me his confidence, and was made whole, and his life I have no doubt, barring accident, will be lengthened twenty years.

So many cases come to my recollection, that it is impossible to spare time or space to record them, but if any reader wishes to prove the truth of my statements, I will give them references to persons who will, I am sure, gladly testify to the blessing God gave to the treatment used. I have had physicians and surgeons as patients at my establishment, or who rather have come to nurse their natural powers to rid them of serious ailments, and they have one and all expressed their perfect approval of the simple natural means used, as they have in all cases received important benefit. One surgeon who came is surgeon to one of the largest dispensaries in England. But seriously and impartially looking at the effects of the ordinary medical treatment of such cases, how can the medical profession support their boasted claims to exclusive and infallible knowledge of disease and its cure, when they leave offensive wounds not only uncured, but tell the patient such are a necessary condition of their existence? Such remarks are an acknowledgment of their inability to cure such cases.

A somewhat similar case about the same age came to my establishment for his daughter's restoration to health, having no idea anything could be done for his case; was quite incredulous when I told him his ulcerated legs could be entirely cured, and the obstinate and long-standing constipation of the bowels and congestion of the liver could be removed. After conversing with patients in the house, and being assured that the very gentle and simple means we used could not possibly injure him, stayed, and was entirely restored to health; and in place of his crutch and walking-stick bought a valuable horse, which he rode to see us one day 28 miles, and now, years since, is in perfect health.

LEGS, SORE, IRRITABLE, or inflamed.—Use No. 139 several times per day. Squeeze wash-leather out of warm water, wrap round the legs, and dry flannel strips, or warm woollen stockings over night and day. Re-damp the leather when dry, or before; it sho[illegible] be kept constantly damp. 159 good before dressing the legs, if [illegible]tunity.

SPRAINS.—Whilst pain continues, attend to No. 58 [illegible] three times a day, and 214. After pain is gone and the [illegible] *weak*, then attend to No. 17 three times a day; and i[illegible] 214 apply a piece of spongio piline on the part, ar[illegible] bandages around affected limb to stimulate circulatio[illegible] limb. If any crisis appears during the above, omit the [illegible] apply 173½ till it is over; 150½ will be very useful for [illegible] the crisis (*rash or boils*) is gone off, and the part only fe[illegible] cod-liver oil on twice a day with the hand, and kee[illegible] spongio piline on for some time; this also promotes ci[illegible] vitality in the part. If the above does not relieve, use [illegible]

CONSTIPATION OF THE BOWELS.—This for[illegible] ment we have never failed to overcome by simple water [illegible] and without the assistance of any aperient whatever. Ou[illegible] and conviction is, that the bowels will never act naturall[illegible] any aperient is used. Constipation of the bowels is, howe[illegible] symptom of ailments elsewhere. When the nervous system i[illegible] state, the blood poor, the circulation languid, there will b[illegible] constipation or looseness, as the proper action of the bowels [illegible] entirely on good circulation of blood in the mesenteric blood [illegible] giving power to the excretory vessels to draw out of the blood t[illegible] excretive, and also in the vitality of the nerves, which cause the peristaltic action of the bowels. The primary cause of constipation is probably oftener caused by inaction of the liver; the gall is not formed, and passed into the bowels for their natural stimulant. No. 48 is good for this. See the intelligent article by Dr. Denham at the end of this book, on the folly and mischief of purgatives. Thousands are destroyed by purgatives, or suffer continually from the effects of them. All purgatives necessarily lower the vitality of the bowels, and are diametrically opposed to healthy function; but from the time-honoured, although vicious, plan of "*unloading*" the bowels by the ready way of purgatives, without any regard to the constitution of the organs, it is difficult to disabuse the public of the mischief, and indeed the fatal results. The use of No. 163 night and day, with 172, and the home treatment, page 6. No. 69 good; Nos. 46, 48, 69, 78¾, 225, 206, 210, or 208. Diet, no stimulants whatever, nor coffee; the less flesh-meat the better; no pork. No tobacco, of course, as that will paralyse the action of the liver, the mesenteric vessels, and nerves. If long constipation, and no motion of two or three days, then an injection of warm water may be used, or warm glycerine and water; but we object to injections, except where there is sense of fulness in the bowels and rectum, and the less it is used the better. No. 83 5 min. is good, and also see No. 78 and No. 78½. All these numbers refer to the bath list in this book. 154 often good. If No. 163 is not warm wear 171 over it night and day, and in night two No. 171 over 163. Great warmth must be kept up over bowels. 73, good. 13, 10, 11, should often be used to get good circulation on the skin, and allow the waste of the body to come freely through the pores.

AGUE.—The mild water treatment is eminently successful in curing and entirely eradicating this formidable complaint. The hot and cold dripping sheet on rising, the fomenting pack, and ordinary wet pack, varied by a vapour bath, with cold dripping sheet or sponge down after it, and the use of the wet body bandage day and night, with a dry flannel wrapped over it if it does not keep a good warmth. Hot soaping and sponge over cold at bed-time, once or twice a week. The hot sitz fifteen minutes, followed by a sponging over in nearly cold water, the feet in hot mustard and water every night at bed-time, and the body bandage, would in most cases be sufficient, with care in diet, and abstinence from all stimulants and flesh-meat. The fomenting pack one hour, or one hour and a quarter, will arrest the attack at once.

BRAIN FEVER.—We have had several severe cases under treatment, and have been successful with them. I can only give some general directions in these cases, as the attack comes on from such various causes, and requires treating accordingly; but the great point in all cases of course is, to lower the excitement in the brain by derivative baths, relieving the over-charged blood-vessels in the head, and the nervous excitement. In the first place, cut off the hair from the head (females may leave the long hair in front), have head bath 70 degrees, five to ten minutes, two or three times per day, and sponge the forehead while in. Mustard plasters to the soles of the feet day and night, as long as the patient can bear them, the legs and feet wet packed (bath list, No. 214); and when the feet are too tender, put on cotton socks wrung out of tepid water, and lambs' wool over; have hot bottle also to the feet. Mustard plaster over the right side, in the region of the liver, till red. Fomentation back and front (No. 64 on list), twenty minutes at a time. Night and day spongio spinal compress. Wet body bandage, wrung out of hot water, should be used; and if it does not keep warm, put a flannel wrapper over it, as it is of great importance to keep up a good warmth in the stomach and bowels. The arms should be bandaged with wet strips of calico, mackintosh, and flannel. Towel pack (No. 45), washing the body over with hot water and yellow soap morning and evening, and sponging over with tepid water, standing on hot pad. Diet.—Cooling drink (see receipt, page 128); barley water. No flesh-meat, coffee, &c. If there is much exhaustion, a teaspoonful of brandy in sago creed in water. Soon as the patient's appetite returns, cold mutton chopped fine, with bread-crumbs; and taking water by sips, and as much as the patient desires. In some cases we have found the following treatment very beneficial:—221 as much as the strength of patient would allow, especially attending to "head" directions as there specified; and when not in 221, keep 220 on nape of neck and pit of stomach, and 215½, using vinegar with the water for head, and 153½ to feet. 130 should also be attended to as frequently as the case will admit it to be done.

FISTULA.—(*See cuts of rectum.*) Dr. Hooper says: "Fistula in Ano. A sinus by the side of the rectum. From the laxity of the cellular membrane in the vicinity of the rectum, abscesses which form here easily become diffused, and the matter burrows by the side of the gut, often to a very formidable extent, and hence the necessity of early attention and great care in the treatment of abscesses so situated. Those fistulæ in which the matter has made its escape by one or more openings through the skin only, are called *blind external fistulæ;* those in which the matter has been discharged through an opening into the rectum, without any aperture in the skin, are called *blind internal fistulæ;* and those which open both into the gut and also externally through the skin, are called *complete fistulæ.* The cure is by a surgical operation, which consists in laying the sinus freely open, and applying proper dressings to promote its incarnation.

Fistulas come on from sedentary habits, and especially from purgatives, in the form of aloes, and other purgatives. The habitual use of the sitz bath will prevent fistula and piles. We have had cases of long-standing fistula cured with nothing but the baths, 105½, four minutes; followed by 119½ or 86, three minutes; 220 to the place may be used in night; then use usual home treatment, page 6, also 48 or 49, and 165, 172. Abstain from flesh meat entirely, and all stimulants or tobacco. An occasional 59, or 51, or 52 useful; or after a surgical operation this treatment will heal and restore the parts.

Precautionary measures to ward off consumption and other diseases should be taken early, when self-denial and exertion would prevent years of misery often ending in premature death.*

I am sometimes asked how it happens that persons get into a bad state of health, whose habits have been strictly correct, and who have never indulged their palate at the expense of the stomach? I reply, it is easily accounted for. The body is in a constant state of waste and reparation. Active exercise in the open air is a condition of healthy existence; and just so far as mankind can enjoy this, is their prospect of having a healthy body. By every voluntary action the cellular tissue is displaced, and a call made for new matter to replace the waste. By every active inspiration, the pure air is forced into the minute air-vessels in the lungs with a power of 4 cwt.; where it gives to the blood the life-giving oxygen which consumes the carbon or waste matter. By a sedentary life, or a bad atmosphere, the old worn-out matter is not removed; the carbon in the blood is not consumed, for want of the oxygen in fresh air. The nervous system soon feels the effects of this unnatural state; and hence comes dyspepsia, and the long train of evils caused by having worn-out matter in the frame, instead of living flesh and nerves. Sometimes this enfeebled state goes on until the frame becomes a wreck, or some weak vital part gives way, and the body dies by inflammation or fever, &c. We find Ling's or the Swedish movements of great service in most cases, and especially in weakness of the chest; even a delicate person may exercise the chest and arms to great advantage by sitting in a chair, clenching the fists, working the arms and shoulders, and at the same time expanding the chest, with the head thrown back, opening the mouth and breathing freely, moving the trunk backwards and forwards. An immediate warm sensation will generally be felt in the muscles of the chest.

The amount of exercise should be regulated by the strength of the person; over-fatigue would bring on excitement and mischief. Exercise should be frequently practised for a few minutes at a time, and habitually expand the chest: this would prevent consumption in many cases. It is melancholy to see such numbers of comparatively young persons, and especially females, with chest affections brought on by inattention to the natural laws of health,—sedentary habits, warm rooms, stimulating food and liquids, undue brain excitement from study, before the frame is fully developed, late hours, and in many cases by over-anxiety to realise what is thought a necessary maintenance.

Then again little attention is paid to the requirements of the body in clothing; fashion or custom is more thought of than the physiological structure and functions of the body. With very few exceptions, all the patients who come to my Hydropathic Establishment in autumn, winter, and spring are very inconsistently clothed. Cold water will never cure invalids, or enable them to resist cold, without proper clothing in this climate. The chest is very generally the most exposed part of the body, except the head and hands; and it should be the most protected, as well as the stomach and liver, and bowels; for if the vital warmth of those parts is lowered, their functionary power of action will be just so much lessened. I believe, one of the principal causes of disease with those who lead sedentary lives, or are exposed to the weather, is the little care that is paid to keeping the trunk of the body well protected, and the vital heat retained in it; and the little or mostly no attention paid to exercising the body. Exercise, as I have before remarked, may be had without either a large space or long walks. New gymnastics and exercises, page 2, will instruct in the manner to move the limbs and body in various directions; and it must be remembered, that every movement works off some old worn-out tissue, and stimulates circulation. Thousands, and especially ladies, never exercise their limbs and body only by slowly walking from one room to another, or when in the open air never exert their physical powers to bring good healthy circulation; and as the Creator has made the exercise of all the muscles and bones of the frame a condition of health, and man cannot alter or abrogate those laws, they must either be obeyed, or the consequences of acting independently of them must be experienced. (See also page 260.)

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* *For treatment of sudden inflammation of the lungs, see p.* 112.

A case of this kind, where these laws have not been either understood or acted upon, has consulted me by letter, this morning, stating he is occupied in a wholesale warehouse, in a close part of the city, from 8.30 A.M. to 8 P.M., with only one hour during that time for meals and rest, gas-lights burning often all day in winter. The consequence is, that a chest complaint has been established that will probably soon render him unable to continue his employment; he will be recommended to country air, and go there to die, leaving a wife and family to struggle on in life, surrounded with difficulties which are very likely to bring them to the same melancholy state. The answer is, we must attend to business or starve. There is no reason in such an observation; men should be content with any employment and remuneration, rather than place themselves in such positions,—contracting ties and engagements that they are eventually unable to fulfil, and by the attempt multiply misery and disease. How often when success in business crowns their efforts, they find they have sacrificed what money cannot purchase, and by no efforts can regain the health they have lost, or ability to enjoy life. They then often envy the very out-door labourer; but when the mischief is done, regrets are useless, and often a settled melancholy rests upon the mind, further depressing, and hastening the climax.

The more experience we have in cases of diseases of the lungs, and less hopes we have of curing many of such diseases; for generally they are cases such as I have just described, who come for a short time to be patched up, and return to the same course of life, still hoping against reason that they can yet go on with a little more care, when in fact only an entire abandonment of their business and locality can be of any permanent use to them. Females are also, either by their occupations, or previously contracted sedentary habits, or from family duties, in the same position; and all we can do is to give them instructions how to ward off attacks and improve their health in a degree, and in this our mild Hydropathic plans, and instruction in clothing, diet, and habits, are eminently successful. We have had many successful cures in females, where affection of the lungs has come on from excess or stoppage of periodical discharge, and when our sitz baths, &c., have regulated the constitution, health has been regained; in other cases, both male and female, after a course of our treatment, they have changed their occupations or residence, and adopted our other instructions, and have been permanently restored to sound health (See page 178).

CONSUMPTIVE PERSONS may use the water treatment with advantage, but it must be very cautiously applied, and not with cold water, say seventy-five to eighty degrees. To give a general idea of our plan of treatment, I give as follows, which of course has to be varied according to the age and nature of the case. (See bath list, 14, 23, 26, 68, 71, 72, 74; chest compresses, according to vitality of patient, Nos. 179, 180, 182, 196, 197, 198, 207, 208, 212, 213). Keep the body covered as much as possible during the operations with a blanket, and dress entirely and quickly. It is important not to expose the body to the air while undressed, as it rapidly loses heat, and in persons of weak habit is injurious. The ordinary plan of sponging the body with cold water by delicate persons is often very injurious. Wear a chest compress night and day, frequently sprinkled with a little tepid water, but not to drip. Cod-liver oil is efficacious—two tea-spoonfuls per day, one after breakfast and another after tea. Light hosiery vest for summer, good lambs' wool for winter, and lambs' wool stockings winter and summer. Ripe grapes or strawberries good, and also stewed fruits; no kind of stimulants or coffee. The clothes to fit up to the throat, especially in winter, and short sleeves to outer waistcoat, to protect the armpits. If the bowels are not regular, use No. 78 on list. Some consumptive patients cannot bear much treatment, and then feelings and symptoms must dictate.

RUBBING THE CHEST with hand and cold water, and wearing flannel pad or wetted chest compress, will strengthen the chest, the rubbing twice a-day; summer dress should be changed at the end of August. See Bath List for compresses, 179, 180, 186.

TREATMENT FOR ARRESTING FEVER speedily, and which may be safely applied in all cases, delicate or otherwise. Keep in bed, and apply 163¼, 214 to legs and arms, 153½, 215, and in addition to 215 rest back of head on a sponge squeezed out of cold water, placing a piece of macintosh or oiled silk on pillow; if no sponge, use a piece of flannel doubled up instead; then renew all these in cold water when they begin to feel warm, and when renewing them, sponge limbs and stomach with 70 degrees vinegar and water, and especially sponge under the arm-pits and about the thighs; also attend to 206. First treatment next morning 221 and 130, forenoon 131½ and 141; afternoon as morning treatment. Bedtime, 13½. The first part of the treatment to be continued till fever subdued; 152 whilst fever is on. Du Barry's Revalenta, half milk and half water, 1 oz. to a pint, flavoured with a little sugar or little salt, cooling drink, as receipt in this book. No medicine of any kind, and avoid flesh-meat until quite well. Fresh air essential, and good ventilation.

SUDDEN ATTACK OF BRONCHITIS will be arrested by the following plans:—First, No. 9, 13; then **No.** 68, and 138; 98 at bed-time. The following day have, on rising, No. 7; during day, 74 or 59; and at night, 98, and 79, 208, 198, 196, 153, 177, 172. If in delicate persons, immediately apply 68 and 141; after this, 180, placing a piece of spongio piline, sprinkled with hot water, underneath collar of compress; and if no spongio, use flannel, and a good, warm, dry flannel wrapper over the collar. After the effects of the mustard have a little subsided, then attend to No. 226, and wrap the legs in strips of new flannel, and apply 153½ and 215, kept regularly renewed. Repeat the above 68 and 141 as often as required, to keep up good reaction on chest and legs; warm barley water, to keep sipping. If food is wanted, milk, or milk and water, thickened with Du Barry's Revelenta, one ounce to a pint, sweetened with a little refined sugar, or taken with a little salt, but no bread with it. Revelenta can be had of any druggist or grocer. Food very light, and the less quantity the better; no stimulants, cough mixture, or any physic whatever. The temperature of the room should not be under 70 degrees; or, if this cannot be had, use a respirator night and day, till attack has subsided. The respirator is very useful and safe in such cases.

CONSUMPTION—incipient or just commencing. Home treatment: On rising, take one of the following bath numbers, varying as feelings dictate:—10, 13⅓, 13¾, 22, 24, 25, 26½, 72, 72½. When feeling pain in chest, use 23 instead of any of the others. If much morning perspiration, use 13¾ oftenest. All the forenoon get out in the air, without fatigue; use respirator if cold. Afternoon, when feet and legs are cold, use 141 or 143, with either 156 or 153½. When legs and feet not cold, then in afternoon till bed-time attend to 106, with very little water in bath. When using 156, wipe feet with tepid towel, instead of dashing them into cold water. Bed-time: Sponge whole body over with tepid or cold vinegar and water, when not too fatigued; keep hot-water foot-bottle to feet in bed, wearing 153 or 195, whichever most agreeable. Whenever cough is troublesome, attend to 68 instead of above bed-time treatment; attend to 212 and 77. If, in the heat of summer, compresses oppressive, have new flannel ones—double and quilted—to wear instead. Diet, 210; no stimulants or coffee—the less flesh meat the better; milk good, if it agrees; 207, 77; use 180 and 179 without collar put on behind.

CASE Z.—Gentleman, aged 28; rather long-standing affection of the lungs; a good deal reduced, with much expectoration. On rising, 71, and then put on 180 dry on chest, and only damp it over stomach; then 114 in bed (13 and 14 once a week; breakfast in bed). Forenoon, 141, with hot brick, in cloth, to feet. Afternoon, 71, 158, whilst lying in 77; when any pain in chest, have 23, 195, 179 behind, and 207.

SWEATING AT NIGHTS.—Before going to bed, have a sponge over with sponge slightly squeezed out of vinegar and water, and same on rising; and if chest affected and difficulty in breathing also chest pack all night. No. 226 Bath List, also 13½, 13¾.

THROAT AFFECTION, AND DIFFICULTY OF BREATHING.—An elderly lady had for a long time been troubled in this way. A flannel wrapper wrung out of hot water was put round the throat every night, and a large roll of dry flannel over it. This was continued for a week; sponging the throat with water 80 degrees, in the morning, and putting usual half-chest wet compress on with collar during the day, soon quite removed the complaint. If stubborn, mustard plaster on the throat, and kept red for a few days, with hot mustard foot-bath at bed-time, will aid the fomentation. See Nos. 79, 80, 81, 82 on bath list.

INFLUENZA.—The treatment varies according to the age and strength of the patient. In ordinary cases we commence with 46, and 6, or 30; then 156; afternoon, 93; bed-time, 156, 194, 168, 172; next day, same, and 208, 212, 213; 59 is very useful in some cases. Any stronger treatment will be prejudicial, as the strength is always greatly reduced in these cases; and, in fact, it is the lowered vitality of the frame which is the cause of the complaint. Next, warmth and patience are requisite. Influenza is not to be got rid of like a mere cold, or bilious attack; and every attempt to do so quickly will only more endanger the patient's life, by laying the foundation of chronic disease. If 47 cannot be managed, substitute 52.

QUINSY, OR INFLAMED OR ULCERATED SORE THROAT.—46 and 80 same time, and 6 after pack; then 79 and 177, 166. Every two hours use 82, until relief is given; then 79. 98 at bed-time, soaping, and feet in hot mustard. No. 138 during the day, for fifteen minutes good. A perseverance in these plans will certainly cure without medicine. If relief is not soon had with 82 put on 81, and repeat it, if the skin will bear it; 208 and cooling drink; aperient medicine will only increase the mucous inflammation. Thin barley water very good, and also one-third of a bottle of soda-water, with a spoonful of raspberry vinegar bottom of the glass: repeat this every four or five hours. 215—No. 46 repeated every day, till relief is had. If the patient feels weak after the first one or two packs, use 141 or 144 instead, and wrap legs in dry flannel, and feet also. We have proved these plans effectual in a severe case of ulcerated throat, after scarlet fever, recently.

VARICOSE VEINS IN THE LEGS.—Our experience in these cases has shown us that a disordered state of the liver is the principal if not the sole cause of varicose veins in the legs, except in very delicate persons; and in the latter cases, which are rare, the disease has been brought on mostly by having to stand a good deal in the occupations of business. All troubled with varicose veins should avoid standing, as much as possible, until cured, and for some time after cure. As Hooper says, these veins are composed, like arteries, of three tunics or coats, but which are much more slender than in the arteries; yet, by their contractile power, they have to force the blood from the feet and legs upwards into the liver and lungs, through an extensive network of channels. The obstruction, as Cooper says, is not always externally; sometimes it is deep-seated in the trunk, and causes internal tumours, and, indeed, is the most common cause of tumour; for when there is obstruction, there is soon adhesion and stoppage, and Nature tries to remove the obstruction by tumour and abscess, and often succeeds in bringing the parts to a natural state again. The curative power inherent in the frame is of great force, and works in a wonderful manner for the preservation of life. Sea-bathing and plunge-baths are a common cause of internal varicose veins, ending often in tumour and death. The weak veins have suddenly a large quantity of blood thrown upon them; they may be in a state, in some part of the body, not able to bear the pressure, or return the blood; or become unnaturally dilated, and so lay the foundation of disease, to be developed years after, and which is often too mysterious to be ascertained; but when we know what may be the consequence of an undue pressure upon weak organs, it is wisdom not to risk such possible evils.

HYDROPATHIC TREATMENT FOR VARICOSE VEINS.—Our first object is to restore the general circulation; and, in order to do this, we must begin with the stomach, liver, &c., giving general treatment for their healthy action. First morning (see bath list), No. 2, on rising;

second morning, Nos. 19 and 27; third morning, No. 32; then repeat; forenoon, first day, 42 with 1 or 27, or 47 with 1 or 27; second day, 48; third day, if person at all stout or of sluggish action, 60 with 1 or 27; afternoon, 50 and 159, or 50 and 144; and No. 214, night and day, 208, 163½, 172. Whenever No. 214 is removed to foment or re-wet bandages, dry rub legs upwards, and never downwards. When crisis comes out on legs or body, moderate above, and do not let any cold water touch crisis; 142, 145, 147, and 148 will be applicable when crisis comes on. There is never any danger with crisis; a person will never take cold where the crisis is; nor is it at all possible for the crisis to go into erysipelas; the only effect of cold to the parts would be to stop the restoration. Our crisis never takes place, except from the raised powers of the nutritive organs, and, therefore, entirely differs from forced counter-irritation, in the form of blisters, setons, &c.; by these, the surgeon hopes to drain out the disease, but it is often a consideration with him whether the patient's constitution can stand this drain; for, if it is continued too long, inflammatory action ensues, simply from weakness, and, with the disease, the life of the body is drawn away. We must invigorate the powers of the stomach, the liver, &c., before we can get the least crisis; we can never get crisis so long as the appetite is bad, and the digestive organs inactive; and, with good action of these organs, a person can bear the discharge, and gain weight under the process. For some time after the cure of varicose veins in the legs, the person should wear dry flannel bandages, or damped wash-leather, with flannel bandages over a woollen stocking; if in summer, silk stockings over wash-leather. Avoid long walks or much standing, to give the renewed veins time to strengthen, as they have been made over again in the process. If no time for this effectual treatment, great relief, and in some cases cure, will be obtained by using the damp wash-leather and flannel bandages only, and dry rub the legs on re-damping the wash-leather, rubbing upwards and never downwards.

DELIRIUM TREMENS.—We have had many severe cases of this kind, and have been entirely successful in the treatment of them, and in delivering the patients from the dreadful propensity to intoxicating drinks—the cause of the malady. Mild hydropathic treatment very soon tells beneficially in such cases, and, at the same time that it soothes and quiets the fever, produces a counter-stimulus by acting on the skin, and relieving the irritated nerves, and allaying thirst.

The medical practitioners are afraid of cutting off at once the patient's supply of stimulants, but we are not so; and, in every case, have withdrawn all strong drink from the first, and have only administered a little spirit of ammonia in water, and nothing stronger. Dr Gully, of Malvern, it will be seen by the extracts in this book, is of the same opinion, as to the advisability and safety of withholding all stimulants at once.

The treatment must be very mild and delicate at first, on account of the brain irritation. We confine them to bed for some days, and first in the morning give 26, and in forenoon use very gentle fomentations to the bowels 64, also lazy packs No. 50 on bath list.

Head baths, No. 131, and napkin wrung out of cold water put round the head and worn night and day, No. 215, and often re-wetted. The treatment must be proportioned to the strength of the patient, who must not be left for a moment until better, as sudden fits of uncontrollable madness frequently come on. To have the arms and legs packed in strips of wet calico, with dry flannel over, if very irritable, often renewed, will have a good effect; also put on 163½ and 188. No. 206½ is also very useful. Mustard plasters may be applied to the soles of the feet a good deal, wearing the wet socks, with dry lambs' wool over, night and day. A hot fomenting pack to the legs, No. 143, for 1½ hour, occasionally, will be good. To sip cold water constantly; and the less solid food taken the better, until the stomach has recovered its tone. I have had also several severe cases, from taking opium and laudanum, in which the bowels were so constipated that nothing but croton oil would produce a motion of the bowels, and then only once a fortnight. In every case we were entirely successful in restoring the patients to perfect health, and instrumental in delivering them from their baneful vice.

After the first few days or a week of the foregoing mild application, we began with No. 2 on rising, No. 51 every other forenoon; other forenoons No. 44 and No. 69, followed by 123. In afternoon, No. 90 or 121; and soon as there is little more tone, No. 100 and 155 or 156, and 131 and 132. No. 48 will be necessary two or three times per week, as the liver is certain to be congested. No. 90 at bed-time, with 194.

(See bath list, page 430, "Delirium Tremens.")

DISEASE IN THE FRONTAL SINUS, CAUSING FETID DISCHARGE FROM THE NOSE, is often very distressing; sometimes decayed bone will come away with the matter. We have successfully treated several cases, which had resisted all other remedies, by the following simple plans. One case of years' standing was cured in two months, and is now, two years since, quite well. Twice a-day put feet in hot mustard and water, and at the same time use bath No. 136; use No. 92 night and morning for twenty minutes, and head wrapped as in No. 136 same time. The ordinary home treatment, dripping sheets, &c., to be practised in addition. 131 good.

RELIEVING PAIN BY OPIATES.—I have frequently observed the effects of medical practitioners combating active disease and excruciating pain by giving repeated doses of morphia, which, they are perfectly well aware, can only stupify the nervous sensibility, but can have no possible restorative properties; nor do they expect any from their use. I have known cases kept under the influence of narcotics until death has released the patient, when, by our active foment packs and our wet compresses, &c. &c., I could have been perfectly certain of determining the inflammatory action to the surface of the body, and so effectually and naturally relieve the suffering organs. The medical practitioner thinks sleep must be had on any terms, therefore allays pain by opiates; but, in doing this, he sacrifices the only chance of recovery for a mere temporary alleviation. We never do this, but wait till natural sleep is obtained by our natural gentle means; and we have never had cause to regret not having taken other measures.

The use of opiates effectually prevents the frame rallying in many cases; and, for a temporary alleviation of pain, the life of the patient is sacrificed. There is no reason why opiates should cure, but there are very good reasons why they should and do lower the curative power of nature, and so prevent the rallying of the vital powers, which alone can give a chance of recovery. Where opiates are given, and the patient recovers, it is the triumph of the natural vitality over the opium, not the opiates over the disease.

DISLOCATION OF THE KNEE-CAP, OR PATELLA.—A gentleman, age about twenty-eight, strong and healthy constitution, was nursing his child, and by some means gave his knee a wrench and displaced the cap bone. He applied to a surgeon, who replaced and bound up the part, applying stimulating lotions and other usual remedies; but the knee swelled to a large size, and all the means that the surgeon could bring to bear upon it were unavailing to reduce the effusion into the joint which had taken place. There was crepitus of the joint, and little hope was given of relief, but by making a stiff joint, or, possibly, amputation. We entirely removed the effusion and the crepitus, and cured the knee simply by our fomentation and bandages; bath list, No. 141, to the leg; also Nos. 143, 214, and 137, with treatment for the general health; dripping sheets, Nos. 38, 51, 59, 101, 163½, 172, 208. spongio knee-cap also 17.

CASE OF CONGESTED LIVER, LONG STANDING.—I have lately shown some cases of crisis to surgeons, and they have expressed their surprise at the powerful effects produced by simple water. One case, a gentleman, age about fifty, the right side very weak, the knee especially, and the whole side cold. This was caused by the obstructed venous circulation. For many years, this patient had been under Allopathic treatment without any material relief, and, latterly, was decidedly worse, which made him lose confidence in his doctor's prescriptions, and he came to me to try Hydropathy. By applications to the skin, we soon got perspiration; then by our fomentations to the liver and bowels, Nos. 48 and 49, and our wet bandages, we soon set the stomach, liver, and bowels to work healthily; and now our object was to correct morbid action in the liver and in the viscera, but not by purging the bowels. We got a good deal through the skin, but this was not sufficient to cleanse the system. Nature had pointed out the place for effectual relief in the lame leg. We followed her hint, by using Nos. 141, 143, 137, 140, and 214, which shortly brought out a crisis, and laid the patient up in bed, with legs discharging fetid matter, apparently highly inflamed and swollen; appetite little, under this disturbance of the frame, and consequent apparent sinking. Our surgeon was alarmed with the case, and said, if it was his, he should have little hope of the man's life, and, moreover, would at once give generous diet and some stimulants.

I have named the case to illustrate the difference of our action. I replied, I was quite certain that the patient would not only survive, but would become entirely sound in every part of his frame. We let nature work, with a little assistance to cool any feverish feelings; stopped all animal food; gave only water or weak black tea to drink; and, when nature had had time to perform her work, the patient became perfectly and entirely well, and has enjoyed excellent health ever since,—now several years ago. I never knew this natural crisis do anything but good.

The many deaths of apparently stout persons from inflammation or fever is owing to the inefficacy of any allopathic means to throw off the mucous inflammation on to the non-vital part, or to the surface of the body. Purgatives and blisters only further lower the nervous vitality; and tonics only stimulate to cause loss of power by reaction. The mischief is sometimes warded off, but always at the expense of the constitution. The seeds of the disease can never be safely eradicated, but in nature's own way of expelling morbid matter or worn-out tissue, principally through the surface of the body, and by the renewed vitality of the blood-making organs, the stomach, &c., which, as I have before remarked, are, by the suicidal plans of the drug doctors, incapacitated from healthy action in the very first attempts at cure, by introducing matter obnoxious to them.

Case No. 1.—Gentleman, apparently stout, age 50, but from over-brainwork and severe family afflictions highly nervous, and sensitive to cold, even in summer;

ringing sound in the ears almost constant, head stuffed, and a fetid discharge from the nose; all owing to brain irritation, aggravated by the common fallacy of the necessity of keeping the bowels open. This keeping the bowels open is a fallacious doctrine, that lays the foundation of disease in thousands; and, from being one of the cardinal principles of the medical profession, it is not surprising the public are of the same opinion. If the bowels were of the same material as copper or lead pipes, there would be sound reasons for scouring them often; but as they have a mucous internal coating, to perform important offices in protecting the absorbents, blood-vessels, and nerves, it is very unadvisable to scour this away. I feel I cannot say too much to caution persons against using any aperients of any kind. We never use the slightest aperient of any nature, and never fail to get natural action of the bowels. Why do not the medical profession adopt similar plans? Ours are always successful, theirs never, in bringing on and establishing natural action. This patient only stayed a fortnight at my establishment; when he came, water at 80 degrees gave him a shock; he soon bore the water colder, and got a deal of important information for his future guidance in diet, clothing, and habits of life. He informs me he is recovering his former good health.

Case No. 4.—LOSS OF THE USE OF ONE ARM.—I have lately had in my free hospital a case of the loss of the use of one arm, from smoking tobacco. The man has returned home entirely restored, and, but for this treatment, he would have been a cripple for life. Neither the parish doctor nor the infirmary officers, who had the case, could give him any relief; nor were they likely to do so, because their treatment of such cases goes at once to lower the vitality of the very nerves that are already weakened from want of nutrition. Short steamers, Nos. 51 and 27 or 1, with 46, once a-week; Nos. 59, 27, once a-week, and No. 2 on rising, and after a short time colder treatment and bandaging the arm, was all we applied; 163½, 172, 207, and 214 to arm.

Case No. 5.—Age 35; for several years liver affection, then of the right lung, and general wasting. He gave up business, came to my establishment, and is progressing well, and gaining weight, under the following treatment, varied according to symptoms:—First morning, 71 and 8, feet on hot pad covered with blankets while having 71; second morning, 71 and 12; third, same: first forenoon, 70, 71, 107; second, 45, 71; third, 49, 71, 107; afternoon, 156, 181, 168, 207.

Case No. 6.—Age 22, EPILEPSY.—Under the following treatment he had only one attack, shortly after he came, and has had none since:—First morning, 101, 32; second, 101, 3; third, 101, 3: first forenoon, 36 slight; second, 111, 132; third, same: afternoon, 111, 132, 155, 186, 164, 172, 208.

Case No. 7.—A gentleman, age 26; been in hot climate, chest and lungs affected, and much wasted. The following treatment, varied according to circumstances, enabled him to resume his duties. Morning, 71, 25; forenoon, first day, 81; second, 72, 74; third, same; afternoon, 115, 179, 172; 208, 207, 212; got to No. 8 and No. 2 after a fortnight.

Case No. 8.—A gentleman, age 28, slight, fair complexion, of highly nervous temperament; from the agitation of a lawsuit, broke down; stomach sympathising with the brain; constantly irritable, little sleep, and wasting flesh; countenance pale, and dark under the eyes; low vitality. Prescription in August:—Waking, have a cup of weak black tea, with a little toast in it, then have 130 and 156 before breakfast; for breakfast take a little cold mutton, all lean, and well masticate it, with white bread, and a glass of cold water taken by sips; at 11.30, a cup of beef-tea, lukewarm, no bread, and then take 130 and 49, keeping head very high, and narrow mustard poultices to feet; need not entirely undress; dinner, same as breakfast, varied with cold chicken, rabbit, or game, boiled sole, or fresh-water fish, cold water to drink by sips; four o'clock, a bit of dry white bread, and glass of water by sips, and afterwards take 130 and 26; tea-time, 6 o'clock take as ordered for breakfast; bed-time, a cup-full of lukewarm arrow root or sago and 130, 156, 194. Wear wet head bandage all night, re-wetting it when awake; body bandage 169 and 186 in daytime; and in night, 172, and no spinal. Avoid all violent exercise, and rest on sofa a good deal; no reading or writing, or excitement of brain in any way.

Case No. 9.—Gentleman, age 26; scorbutic eruption over good deal of body; tried many remedies in vain. On rising, first day, 39 and 28; second, 35; third, No. 2. Forenoon, first day, 55; second, 59 and 28; third, 39. Afternoon, 87, 6. He rapidly improved: cold treatment retards recovery.

Case No. 10.—Gentleman, age 50, very stout, moderate in habits; suffers from determination of blood to the head. On rising, 22, standing on hot pad; forenoon, 104; afternoon, ditto.

Case No. 11.—Minister, age 30; liver and lungs affected, slight spitting of blood. On rising, 8, dry pad to chest; first forenoon, 64 and 24; second, 24 and 156; alternate afternoons, 86, five minutes, and hot mustard foot bath, 217, 177, 175, 211, 198.

Case No. 12.—Gentleman, 38, rather stout; slight bronchial affection; smoked a good deal; liver slightly affected. On rising, 52; second day, 2; third, ditto. Forenoon, first day, 2; second day, 38 and 10; third, 2. Afternoon, 91, 163, 177, 210, 207, 198. Soon restored.

Case No. 13.—Gentleman, age 30, rather slight; nervous dyspepsia from over-mental work; creeping sensations in spine; eyes bloodshot. On rising, 132 and 123. First forenoon, 101, 132, and 155; second, 115 and 155. Afternoon, 144, with 215, and after, 132. Bed-time, 92; if feet not warm in bed, put on wet and dry socks; 76, and recline on sofa with feet up a good deal of the day; the less exercise the better; 215 all day.

Case No. 14. — Age 26, rather slight; nervous dyspepsia; overworked, mentally and physically. On rising, 131 and 156; forenoon, rub spine with dry mustard and hand one minute, then 126; afternoon, 130 and 156, single dry flannel body bandage, and 188. After a time, a little more active treatment, but carefully so, as such cases get well with slight treatment sooner than colder.

Case No. 15.—Heart case. On rising, 22; forenoon, 131; afternoon, 143, taking first, 131; bed-time, 92, ten minutes, sitting longer each time till twenty minutes is reached.

Case No. 16.—General nervous case, almost amounting to spurious palsy. On rising, 113, cold, as soon as can bear it; forenoon, 90, alternate with 115; afternoon, 131 and 156; bed-time, 194 and 193; and, in the course of the day, 199, 200, 163, 187. After a good crisis, passed from the above treatment to the following:—On rising, 125, 132, and 154; afternoon as forenoon, and 199 and 200.

Case No. 17.—Age 22; last stage of consumption. Gave him great relief, and prolonged life. On rising, have 88; forenoon, first day, 22; second, 22; third, 68; afternoon, 90; bed-time, 88, 76, 206, 207, and 179.

Case No. 18.—A gentleman, age about 55, wrote to me in April, from a town eighty miles off, saying he had inflammation of the lungs, and wished me to be ready with a surgeon on his arrival at my Establishment, to treat his case, feeling himself, he said, in imminent danger. When he arrived, we found it a case of severe bronchial affection, with spasms that almost closed the throat. I immediately ordered a fomentation (pads and can) to the chest and round the throat, as he was reclining on a packing bed, and the legs up to the calves in hot mustard and water; after this fomentation had been on one hour, wiped the parts with a towel wrung out of tepid water, then rubbed the parts dry, and laid on a strong mustard poultice round the throat, top of the spine and chest, as long as it could possibly be borne; then dry chest compress and throat bandage. This was six p.m.: at ten o'clock, a hot mustard leg bath, wet throat pack, and spongio piline, chest compress with collar wetted with warm water, and wet flannel and body bandage, warmed the bed, and retired to rest. In the morning, hot soaping and tepid sponge; forenoon, eight minutes vapour, and sheet 70 deg., sitz bath 80 deg., ten minutes feet in hot water. This counter-irritant treatment and determination of blood to the surface of the body, by fomentations and vapours, with total abstinence from animal food, soon relieved the patient, and in a short time brought him to his former state of health, to his great delight; and he had the advantage of not having his system saturated with calomel, not to be got rid of often for years.

RELIEF IN A DYING CASE.—An old man, named Froggatt, Matlock Bank, sent for me last week: I found him dying in great agony, and calling upon God to take him out of his misery. Decay of the vital organs had come on gradually from old age, and from having in former years smoked tobacco and taken stimulants. I saw that by our plans relief could be given. I ordered a bath-man to go with a pair of fomenting pads and a fomenting can, and some sal-volatile, or spirits of ammonia. The man was fomented, as No. 64, gently for one hour, mustard plasters to his feet, and then feet and legs wrapped in flannel; after this a spongio piline full-size chest compress was put on, sprinkled with hot water. The fomentation gave immediate relief and produced sleep, and the man had no more pain while he lived, which was several days after. A little ammonia was given in water, and only water to drink.

CAUTION TO THE DELICATE AND THOSE IN ADVANCED LIFE.—It should always be borne in mind in the application of Hydropathy to the frame, that there is in every frame a certain amount of vital heat; some have a large amount, and can bear great changes without injury; others have less, and invalids have of course always a low amount of the vis vitæ, or power of life. This little may be washed out altogether, either by too great an amount of cold treatment extinguishing the vital heat, or by too much hot treatment relaxing the frame by over-stimulating in another form; it is not the water that cures, but its beneficial effect in gently stimulating by tepid or cold, and by soothing with warm: but nature neither must nor will be forced. The amount of life or vitality in the brain, considered in the changes which take place in a few hours, must be the guide for a judicious, safe, and effective application of this powerful agent. A lady, about sixty-five years of age, came in April, having practised something of the cold water treatment in the winter, and was surprised her breathing was becoming worse. I name this to caution such cases from using cold water in the winter, where there is low power of reaction. Bed-rooms are often cold in winter, and especially of a winter's morning, and exposure in either sponging the body or the chest, when the weather is cold, is certain to cause congestion in elderly or delicate subjects; it is better in such cases to have no such application until noon, and then be careful the body or the chest is exposed to the air as little as possible. The silk and flannel wet chest compress should be worn whenever and as long as there is any oppression on the chest, and sometimes take a six minutes vapour, with tepid sheet or rubbing after, will give relief and not weaken. Torquay should be resorted to in winter.

WATER ON THE CHEST.—When effusion has taken place to much extent, the patient never entirely recovers, and it is mostly soon fatal. When slight, and in subjects not advanced in life, and when it has not been caused by excessive use of drugs or stimulants, it may sometimes be removed simply by our gentle applications to the skin and the wet bandages, fomentations to the stomach, mustard applications to the legs, and foments. If a good crisis can be got in the non-vital parts, the legs, the effusion on the chest will sometimes be withdrawn, and the patient recover; but, if any medical means are tried, recovery is hopeless, as the physic stops the action of the nutritive powers, by which alone the body can throw off disease. It is indeed distressing to see our friends the victims of the superstitious belief in the efficacy of physic to cure ailments which it never cures, but mostly stays one disease to set up another. I have seen stout persons trusting to the doctor's drugs to enable them to live in defiance of nature's laws; the aperient and the lancet have warded off threatened attacks of apoplexy again and again. Often have I heard, "I am stout, I can stand reducing; I get a good clear out, and am well again;" but this clearing out ruins the vital powers of the body, sets up slow chronic mucous inflammation, and eventually so weakens the frame that acute inflammation of some vital organ takes place, and a quick dissolution is the consequence; or, in other cases of strong constitutional powers, water in the chest comes on; and then come the drugs to try to raise the vital powers for absorption, but the previous reducing processes long continued have cut the very ground from under the deluded patient, and he dies long before God intended, had God's laws been observed,—eating and drinking to live, and not living for the gratification of the appetite. What account will such persons have to give to their Creator of their stewardship? That the world thinks little or nothing of; but the fact remains, that God in his Word declares, "*he that soweth to his flesh shall of the flesh reap corruption.*"

IRRITATION OF THE ANUS OR SEAT.—This is often a very troublesome ailment. Sometimes it is caused by worms in the intestines; it is, however, a very common complaint without worms; in these cases, it proceeds from inflammation of the mucous membrane lining, and that inflammation from stomach derangement, the inflammatory action communicating from one part to another, as the mucous membrane lining the stomach and bowels is one continuous network. Abstinence from all stimulants and flesh meat, coffee, salt provisions, and the use of the sitz bath, 65 degrees, for fifteen minutes, two or three times per day, is the best relief we have discovered. Aperient medicines will cause the irritation; and tight-fitting clothing to the part, sitting on sofas or soft chairs, causing an injurious degree of heat, and keeping in perspiration. Cane-bottom chairs are by far the best. 105 hot soap-suds five minutes, then 105 tepid.

WEAKNESS OF THE BLADDER, or Stricture in the Urethra.—This elderly persons are often troubled with. The use of the wet body bandage and sitz bath, at 90 degrees, for twelve minutes, run down to 70 degrees for four minutes, is very beneficial, several times per day. I have a case now of a gentleman, rather stout, and otherwise healthy, age about 68; and the following is the prescription given:—On rising, 144 and 27; forenoon, first day, 42 and 1; second, 59 and 107; third, 36, on the bottom of the back and hips; afternoon, 107, 163, and 172. No. 98 is a very useful bath in many of these cases, and easily applied.

INDIA-RUBBER URINALS FOR MALE AND FEMALE RAILWAY TRAVELLERS, INVALIDS, AND CHILDREN.—These Urinals are made on the most approved principles, and are all fitted with the recently-invented valve, which will not allow any return of the water by the upper part, by being placed in any position, and from their improved construction are better than any similar articles at present in use. Descriptive circulars and lists of prices sent per post. Hospitals, Infirmaries, and Unions supplied on the best terms with every article for the use of the sick and invalided. Sparks and Son, patent surgical truss and bandage makers, 28, Conduit Street, New Bond Street, London.

The following is from Mrs. Smedley's "Ladies' Manual." The Manual gives more extensive directions for treatment of females and children:*—

TREATMENT FOR A YOUNG BABY WHEN IT HAS TAKEN COLD AND IS A LITTLE FEVERISH.—Before dressing it in the morning, have a small blanket, or large piece of double flannel, slightly squeezed out of hot soap-suds, laid over a piece of mackintosh, either on the bed or on the nurse's lap; lay the child on naked, and wrap the blanket or flannel round it; then rub the child well in it for a minute or two over the blanket; have another blanket dry and warmed by the fire to roll it in, and rub it in that till it is quite dry and warm; then put 180, without collar, on the child, with single flannel binder over the 180, over bowels, all dry. If no spongio at hand, put new flannel, doubled in four thicknesses, down the whole front of the child. Twice in the "day" put the child's legs into 137 for five minutes, and whilst in, use 130; do not undress the child for this 137. Bedtime have a "flannel foment pad" large enough to cover the whole chest and bowels, squeeze it out of hot water, wringing all the water out of it by placing it in a towel, two persons twisting the towel, one at each end; place this pad underneath the compress and bandage, letting it stay on all night; if feet are cold, repeat the "day" treatment as above. Children are far better without that common and dangerous practice of "rocking," and, indeed, if they are not accustomed to it, there will be found no need for it at any time.

Tooth Fever.—The first thing in the morning rub the child all over with a wet towel, and dry, according to directions given in No. 22; but the water must be about new-milk warm. Eleven o'clock, put the child in a pack, as directed on page 189; or at night put it into a tub of hot water, as hot as it can bear, till it gently sweats, and then give 22, according to directions given above; but delicate children should never be put into a whole bath, as the re-action will not be good. Put on the chest compress and body bandage for sleeping in, and a wet bandage also round the child's head. Continue this treatment till the fever has subsided, and then only give the wet and dry towel. In teething, rubbing the gums as directed in "*Thrush*" (see page 190) would be very useful and soothing.

Inflammation in the Chest.—Foment the chest half an hour; then put the child in a "pack" (see page 189) for half an hour; then wipe the body over with a wet towel, as No. 22; after which, put on a chest compress and body bandage 177 and 163¼, or 180. Four hours after this foment again, and rub the child over with a wet towel, replacing the wet compress, and at night use hot bath, as previously stated in "Fever Cases." Continue this treatment until the child can breathe freely, and then slacken the number of baths by giving only the pack, and applying the fomentation at night. 226 also very useful *each* night. 115¾ once or twice a day very efficacious, but use more meal than mustard for the plaisters.

THE CROUP.—Directly the symptom is discovered, let the child's feet be put into hot water, or hot mustard and water; undress it, and apply a hot pad to the chest; when this is done, then get ready a hot bath for it, put the child in quite up to the chin, just supporting the head, and keeping the head wet with cold water (or putting a cold cloth round it); well rub the child with the hand whilst in the bath, especially the chest; and as soon as it begins to perspire then take it out, and sponge it quickly down with some water, 80 deg., as 14; then put it into a warm blanket and foment the chest, and put a mustard poultice on the soles of the feet, or 153¼. Repeat the above if the attack does not go off quickly; and after the attack, let the child wear a spongio piline chest compress regularly for a month or two, keeping it damp with hot water (68 on list also useful).

MEASLES.—As soon as the child appears sickening for this disease, or any other skin eruption common to children, immediately put it into a pack (see article on "Scarlet Fever," below), and give it two packs a day, morning and night, till the whole body is fully covered with the rash; then stop packing altogether, and do nothing but wash the body with water, new-milk warm, twice a day, morning and night, and oftener if the rash is very irritable. Keep the child warm, but not hot; keep it quiet, and do not give it much food, but as much cold water as it likes to drink.

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* "Ladies' Manual," by Mrs. Smedley, price 1s. 6d., post free, from the Author, or Job Caudwell, 335, Strand, London.

WHOOPING COUGH.—The first thing in the morning, foment the chest for a quarter of an hour; then put the child in a wet pack, making this difference to the general pack, viz.: first wrap the feet and legs to above the knee in flannel, then take a towel, only large enough to go down the front of the body from the neck to the flannel's edge, wring it out of hot water, and then proceed as below. After the sponging over the body, put on a chest compress, made of spongiopiline, or 177, and a body bandage, calico and oil silk, squeezed well out of hot water, and wear these regularly night and day. Afternoon, give a mustard and water foot-bath, 86 deg., or comfortably warm, for a quarter of an hour, and well rub the feet dry with a warm dry hand, and put on woollen socks. Bed-time, give a hot bath, as stated in "*Croup*," or 68 with 153½ during, and renew the chest and body bandage with hot water, and put a mustard poultice on the soles of the feet, to be worn all night, if possible, or 153½.

The following treatment for SCARLET FEVER, or DIPHTHERITIS, in children, never fails to restore, if applied in any reasonable time after the commencement of the attack:—

When the usual symptoms appear, which are sore throat, nausea, inflamed eyes, and general chilliness, followed by heat and red patches on face and arms, immediately commence as follows:—Put feet into hot mustard and water, and cold wet bandage round head, whilst you prepare a *wet pack*, which is done by laying a *warm blanket*, or two blankets, on a sofa or bed, and a *well* squeezed-out towel out of hot water over the blanket; then wrap the child's feet up in a separate piece of warm flannel, and lay it naked on the squeezed-out towel, and lifting up the child's arms, wrap one side of the towel round the body; then lay the arms down, and wrap the other side of towel over; then well wrap one side of the blanket over, and then lay a soft pillow or blanket over the stomach, and wrap the other side of blanket over, and let the child lie so for half or three-quarters of an hour, taking care that the head bandage is kept cool with cold water. When the child has been in the *wet pack* the time above-named, take it out, and quickly sponge or rub it over with another towel and tepid water, and then well rub it dry with a coarse, dry towel, and put on calico body bandage, 163¼ or 173, squeezed well out of hot water, tight round the bowels. When dressed, pack the throat with a strip of calico, or a small napkin squeezed out of hot water, and a warm strip of new flannel over it, the flannel large enough to wrap round the throat several times; still keep the wet head bandage on, frequently re-wetted when warm; and whenever the feet are cold, put them into hot mustard and water for three or four minutes, and wipe them over with a damp towel before rubbing them dry. Continue the above treatment each day, till the skin is red with the rash, and then only sponge the whole body over morning and night with warm water, keeping on wet body bandage, and attending to throat, head, and feet, as above, and the child will soon be well. If the child be too *delicate* for the *wet pack*, only use the *sponging*, &c. Let the child drink what cold water it wants, and never mind about troubling it with food, as *very little* is needed, and that little should be very *light*; no stimulants or medicine whatever.

When the fever settles principally in the *throat* and *head*, then, in addition to the above, apply 82; and if throat is still bad, put a mustard poultice on till red, then spongio, *dry*, for half an hour, and then apply 82 again, or 220. Also put the back of the child's head in a basin of cold or tepid water, and sponge the forehead well whilst in, for a quarter of an hour at a time, several times a day. Give "cooling drink"* three or four times a day, whilst fever is high. After the feverish symptoms are gone, frequently, in delicate constitutions, the bowels and legs, and sometimes the whole body swells; but no alarm need be felt, as it is only from weakness; but then adopt the following treatment:—Put *soles* of feet in hot mustard and water, and then dry-rub the legs with warm hands, rubbing *upwards*, several times a day, and morning and night dry-rub the whole body with hands and *dry mustard;* wear a piece of new flannel round the body, instead of the body bandage, and wrap up the legs with strips of new flannel, and give one teaspoonful of cod liver oil every night, in a little cream.

SORE HEADS IN CHILDREN, FROM ERUPTION.—On the least appearance of the eruption, immediately attend to 180, and put on the child a calico cap squeezed out of tepid water, and a mackintosh or oil-silk cap over that: be careful frequently to re-wet the calico cap, and, at the same time, wash it, or have a change of caps. If the eruption is bad, apply 130 twice per day, and give the child 45 twice per week, as directed on page 189; no flesh meat or stimulants; and hair cut quite close.

CONVULSION IN CHILDREN.—Immediately undress the child, wrap it in a blanket, put cold wet cloth round the head, feet in hot mustard water, rub bowels gently with dry warm hand, or 150, whilst bath No. 35½ is prepared. After No. 35½ bath, put the child into No. 64, renewing the head bandage as soon as it is warm; on coming out of 64, put on 163¼. If mothers would be careful when their children are not quite well, and put them into a wet pack (see "Scarlet Fever," page 189), they would prevent convulsions coming on—there must be much derangement of health before convulsions can arise.

"THRUSH," OR SORE MOUTH.—This common disease among children arises from the heat of the stomach, and the best treatment is as follows:—On rising, have 78½ after the child's usual washing; forenoon and afternoon, 89 for five minutes in sitz. Bedtime as on rising. *Very frequently* during the day rub the child's gums, tongue, and mouth with the finger and cold water, dipping the finger continually into fresh cold water during the rubbing; and also let the child swallow a teaspoonful of cold water *frequently*. As this disease generally arises from *over*-feeding, the longer the stomach can be kept without food when the thrush is bad the better. And allow me to give the word of caution again to mothers, not to feed their infants more than every three hours, if they can possibly avoid it: they would by this course save their children from this, and that other too common malady, "*Worms*."

WORMS.—The best method of curing this distressing and often destructive disease, both to the comfort and health of the poor child, I find as follows:—On rising have 69, but only for a quarter of an hour; forenoon 87, but soap-suds that heat instead of water to sit in, and keep the child in, if possible, for ten minutes. Repeat the 87 also in the afternoon; bedtime give 222. Twice a week omit all the above, and give "wet pack," as in scarlet fever (page 189), and 163 or 166 bath list.

TREATMENT FOR CHILDREN WHEN THERE IS A SLIGHT "STOMACH" DERANGEMENT.—If "feverish" from it, immediately give them "wet pack," as directions on page 189; or, if not convenient to do that, give 64, with 153½ and 224 during. Keep 163¼ on regular for a day or two, and, if necessary, repeat either of the above each day till well.

If "sickness" is the effect of stomach derangement, then, instead of either of the above, adopt 48, but mix the mustard with meal, so that the child can bear it better and longer—indeed, all meal, and sprinkled only with mustard, will suffice where skin very sensitive. 137 for three or four minutes before putting into 48 would be very advantageous.

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* COOLING DRINK.—To one teaspoonful of citric acid, two of cream of tartar, and the juice of half a lemon, add a quart of cold water, and sweeten with lump sugar. If lemon cannot be procured, add a little more citric acid, and the juice of an orange.

If much pain in head, then 115¾; using the mustard and meal as for 48 would be a better remedy, and in that case 13¼ and 12½ would make 115¾ more speedy in its effects, by giving them first. Next day, if head not well, give 70 and 153½, and take 130 or 131½.

THE MUMPS, being of an epidemic character of disease, should not be omitted, especially as they principally affect the young, and cause much pain, from the locality of the inflammation being on the gland, between the ear and the upper jaw, which affects the swallowing. Treatment for the Mumps:—135 and 58 are the numbers best to be applied locally to ease the pain and reduce the swelling, &c.; but as there is always general fever accompanying this disease, the more regularly the following is attended to the quicker the constitution will be able to throw off this distressing complaint: On rising, 78½, using 135 and 82 during; instead of the caps, as 134, put spongio piline, sprinkled with hot water, on the affected part, and flannel over dressing. Throat as stated in 82 will be found very useful, as the glands being kept very warm will be a great relief. Forenoon, 141, but lay the mustard cloths over the bowels also, and repeat the 135 and 82 as on rising. Afternoon, 115½, and use 135 and 82 during 77. If the whole body be very hot, then take 47 occasionally, instead of 141 in forenoon, and then omit afternoon treatment. Bedtime, 137, and 135, and 82.

RIPER HALL, THE PROPERTY AND RESIDENCE OF MR. GEORGE ALLEN

LOSS OF VITAL HEAT WHILE DRESSING.—This deserves especial notice; for, in cold weather, the good effect of the bath is often lost, and positive mischief done, by not fully dressing soon after the bath. Persons get their bath, get good re-action, and then let this subside by being exposed while finishing their toilet. They should avoid this in cold weather, or better not use water at all. Then, again, to feverish habits cold water is highly agreeable and refreshing; but in these cases great care should be observed to use cold water moderately, because it so much more easily excites the frame. Moderation will do great good in such cases, and take away the hectic flush, and soothe the feverish skin. Of all things avoid cold sponge baths and towel drying; have a sheet to dry with after the sponge bath, or any other bath. While the towel rubbing is going on, the body is exposed, and the vital heat rapidly evaporates, and, in delicate cases, to their great injury.

FATIGUE AND COLD AFTER TRAVELLING.—On returning from a journey on a very cold frosty evening, and having had but little sleep the night previous, and little opportunity for a comfortable meal the day or two before, on arrival at home I took tea at six o'clock, and at eight had a hot shallow bath twenty minutes, soaping over well with common yellow soap and flannel pad, and with a hot pad on the chest and bowels while in the bath; on coming out of the hot shallow, had sponge over with water nearly cold; dressed partially, then had a cold sitz six minutes; dressed entirely, and felt thoroughly restored, and all fatigue gone; went to bed at usual time, slept soundly, and in the morning felt the delightful invigorating effects of the evening's bathing operations. Were this adopted after cold fatiguing journeys, many would be saved from illness and disease, as the system often suffers from lowering of the vitality of the frame, for days or weeks after. Bath No. 98 will do as well.

ADVICE TO A VISITOR.—The proprietor of a public journal is at this time (winter) a visitor at the establishment; he complains that in the winter he is seldom without a bronchial affection, and consequent cough and expectoration, which, if not stopped, must inevitably lead to serious disease or consumption. He is clothed in thin broad-cloth, light open waistcoat, black silk stock, no under-clothing, cotton stockings gartered under the knee, preventing the free circulation of the blood to the feet. His medical adviser, although giving him medicine for years to stop the cough, never once inquired as to his clothing, or gave him a hint that it was wrong. Before expecting any benefit whatever from our baths and bandages, I ordered him good warm under-clothing, and beaver cloth coat and vest; the vest made to button up to the throat, and with short sleeves to protect the arm-pits. I have not the least doubt he will commence a new era in his life and usefulness. With even two days' baths, and warm under-clothing, and lambs' wool socks, with body bandages, he felt altogether different and more comfortable. These unprofessional matters are as absolutely necessary for the surgeon and physician to attend to as any of their prescriptions for the restoration of bodily vigour; and if not attended to, will render any remedial measures unavailing.

RELATION OF LOCOMOTION TO RESPIRATION.—(*From "Herald of Health.*")

THE term "health" is constantly used in a comparative, but seldom indeed in a positive or complete sense. Yet, according to our view, there is no such thing as tolerably or comparatively *good* health; every degree of departure or divergence from a full measure of health being a step or degree toward diseases, or with conditions more or less conflicting with such as conduce to health in any full and perfect form. We believe that full breathing is an indispensable condition toward what is understood by robust, vigorous, or perfect health. But we may remark, in a general way, that of the three grand elements, "earth, air, and water," *air* is equally or even more important and necessary to animate beings than either earth or water; or, more correctly, their adapted representatives to animal life, food and drink, or solid and liquid aliment.

In illustrating this principle we perceive that breathing takes place not only before, but often long before food or liquid, in any form, is taken into the system at the epoch of birth; in cases of supposed drowning, in fevers, and in diseases generally of the vital organs—illustrated conspicuously by diphtheria—air, pure, and unadulterated in composition, is the first and most vital requisite, beyond and before either food, or even water in any form whatever. And when the term of mortal or organic existence is expiring, we again perceive the same principle exemplified in the fact, that while breathing air was the first, it is also the last act performed in discharging the series of functions peculiar to animal nature. Furthermore, we believe that there are ample facts in the structure and functions of animals that have organs and powers of locomotion, which illustrate and establish the principle indicated in the title at the beginning of these remarks.

I remember seeing the statement from *Dr. Hall's Journal of Health*, so-called some years ago, that by walking two miles per hour, persons—and I believe the same will apply to animals—consume *twice* the amount of air that they do when sitting or lying *still;* that the rate of consumption is increased in proportion to the rate of speed, within limits of natural power to perform, and so on. But nowhere do I remember to have seen the natural reason of the facts referred to, or the natural elements that give the power or the form in which it is used, pointed out. Yet it is manifest this ought to be done. But as I have but limited time and means, I can only offer a few outline ideas by way of calling the attention of Dr. Trall and others to the importance of further discussing the subject. If we observe and reflect on our own sensations when *still*, in comparison with those when we are engaged in active motion, walking for instance, we shall perceive not only an increase of breathing and air, inhaled of course, but that this increase is in strict proportion and relation to the degree of our activity. If we walk fast, we breathe faster; if we run, we breathe faster in the degree that our motion is accelerated; when we stand or sit, the rate of breathing is rapidly diminished in consequence of the impetus of locomotion being withdrawn or suspended. This is all apparently indisputable and correct, it may be said. And it is equally true that circulation of the blood, or its velocity of motion, is equally affected, *i.e.*, increased or retarded according to the degree of exercise we indulge in, or as we refrain from it when in a condition of quiescence or stillness. The number of inspirations in either condition of stillness, and moderate and rapid motion, indicate very clearly that the *amount* of air consumed or breathed is a very close relative proportion to the amount of motion or commotion performed. All this, I conceive, goes to establish the fact that air itself is the supporting source of the increase of motion, of circulation, and, as we readily see, of breathing. True, the will directs a more or less rapid contraction and motion of muscle; but this direction would fail to be executed if the required increase of air were not simultaneously inhaled. Thus, all motion and increase of motion depends upon a sufficiency of air to sustain it. If more motion is made, more air is consumed. If less motion, less air. When motion ceases, so do the inhalation of air, and even organic life itself. I have no intention of here discussing the physiological functions of air, but only of noticing circumstances which indicate and determine the quantity and proportion of air we consume, and its more obvious effects. Our power of motion and locomotion is immediately supported by, and in proportion to the extent or rate of breathing. If we breathe *no air* we make *no motion;* and the measure of our motion is identical with that of our consumption of air. Supposing the foregoing to be admitted, because correct, does it not follow that animal locomotion, or the power of locomotion, was ordained in the great chain of nature, to both provide and control a sufficient degree of breathing by man, and in all the animal creation below him?

In the case of animals we perceive pneumonia, or "cattle disease," "hog cholera," "new horse disease," "epizootic amongst fine-woolled sheep," &c. &c., all certainly traceable to the most irrational practice of shutting said animals up, and thus depriving them of even a proximate degree of that natural measure of exercise, without which sufficient air to ensure even a tolerable degree of exemption from formidable disease is utterly impossible. Bright ideas of human duty to brutes, and conceptions of man's destiny, have these nature-defying and instinct-violating "high breeders," very. But not to enlarge on side illustrations, we find, in addition to what has been noticed, that locomotion is necessary to obtain food; that the condition of being "tired," or relaxation of the muscles, from too long tension, usually does not ensue or exist till food enough has been secured. Also (and this is a most important point), that a relaxed, and soon resulting diseased—a permanently injured and weakened condition of the muscles, results when voluntary exertion is desired, and therefore naturally require, but by any means or from any cause long denied or prevented. Whether insufficient exercise result from disease, from indolence, from the nature of occupations—alas! for the tens of thousands in this category—or from whatever cause, the effect will be nearly the same generally: a languid circulation, impure blood, relaxed muscles in general, and equally reduced strength and increase of languor, all conditions of disease. However little locomotion may be engaged in where the air is cool and pure, all these conditions are at once sensibly modified, and the individual feels measurably relieved and invigorated.

My conclusion from such, amongst many other facts, is that the organs and power of locomotion are not given to men and animals for mere purposes of securing food in one place when it may fail in another; for the sake of changing scene to gratify the higher sense; nor for any or all similar purposes alone: but that locomotive power in both man and animals is provided to admit of, secure and control, a full and necessary supply of air for the active play of all the functions; to keep and maintain them in vigorous health, equally as much and as necessarily as for those other uses. This seems to be established by the fact that every diminution of natural exercise or of breathing results in a proportionate reduction of vigour and health; as well as because, on the other hand, the fullest measure of health, vigour and strength, mental, consequent on physical, are ever found in connection with the fullest practicable extent of bodily locomotion. For myself, therefore, I must believe that the power of locomotion is not only the cause of a sufficiency of air being breathed to keep the physical system in vigorous health, but the degree of exertion we are at any time capable of making is at the same time the measure and gauge of the quantity of air required for our fullest health; and that our ability to take exercise, whether the weather be fair or foul, is the only natural or proper limit to the consumption of fresh air that a full measure of health inevitably demands and enjoys.

HEIGHTS OF ABRAHAM.

DIVISION V.

THE SYSTEM OF HYDROPATHY, CRISIS, &c.

If any person submit themselves to the Hydropathic treatment, who have serious mucous inflammatory action of the viscera, or have much morbid matter in their system from paralysis, old inflammatory attacks, &c. &c., under the idea that two or three weeks' active treatment will restore them, they will be much mistaken, for probably by that time they will be in an *apparently* far worse condition than previously, and may be from crisis quite laid up. If health only partially deranged, a short time and no crisis will well repay the time and trouble of a short trial, and will give important information for the remainder of life. Crisis (boils or eruption) cannot be produced by any Hydropathic treatment or bandages in a healthy person; and just in proportion to the amount of disease, so is the amount of crisis. Some patients, who have not much the matter, may have a slight rash or a small boil or two; some none. As I have observed in another place, the body may be in a very disordered state, simply from weakness of the digestive organs, and the vis vitæ, or power of life, not being sufficiently strong to cause the proper chemical change in the food after it is dissolved in the stomach, acidity follows, and afterwards fermentation.

The grand principle of Hydropathic treatment is, that it so invigorates and purifies the whole system, that the laws of nature which will not bear the presence of morbid matter in the system if there is power to expel it, comes into full force, and the poison is no sooner put in, but the healthy tissue, glands, &c., unless overpowered, are offended by it, and set about throwing it off by crisis, diarrhœa, &c. Many, who are horror-struck at the sight of a drunkard destroying himself body and soul, are quite easy when performing the same operation upon themselves in a way slower and less offensive to society, but which nevertheless is suicide after all, simply to gratify the depraved nature.

Nature never cures disease but by crisis in some form or other. Scarlet fever is a crisis to expel inflammatory morbid matter out of the system; and when it is over, and the patient recovered, it is notorious how much better the subject of it is than previous, if the body is not saturated with physic. Small-pox is crisis. That shingles and scarletina also are crises of the same kind, is a doctrine acknowledged by the allopathic practitioners, in the form of counter-irritants, such as setons, issues, and pustules produced by mercurial ointment, &c.; but these are forced crises, and the body is made to produce crisis whether there is vitality or not, and in the places also which the doctor thinks it most convenient or most effective; and with this forced crisis he often draws out the vitality of the body, or of a part, that is never restored. Nature will not be treated like a carpenter repairs a piece of furniture, and it is the height of presumption to attempt such practice. The grand error, the fundamental error of allopathic doctors, lays in not recognising to its full extent the curative powers God has implanted in the body. We frequently hear of practitioners, as they become old in the profession, acknowledge how little good they have ever done by authorised modes of cure. I believe, if every doctor of long experience was examined on this point, he would say, as those do I name in this work, that the more experience they have had in the practice of physic, the less confidence they have in its powers of cure, but have seen plainly how often it causes injury. A retired surgeon, who has stood high in this country, observed to me lately that he had practised thirty-eight years, and quite long enough to lose all confidence in the remedies for disease. He was himself in bad health, and had been so many years, and never could succeed in curing his maladies; and besides, he said he had the advice of the best physicians, all to no purpose. How often the surgeon sees crisis in nature attempting, and succeeding too, in curing disease of the lungs by abscess; the unhealthy matter is discharged, and leaves the lung sound; the abscess has cured the lungs: the same by the liver; and it is notorious that boils are healthy, as the popular phrase runs. I am asked sometimes by patients if I am prescribing treatment for crisis. I say, no. We endeavour to raise the general health by our com-forming system. We neither aim at producing the troublesome and often painful crisis, nor are we alarmed if it comes. If the skin is attended to, the circulation regulated, the viscera got into good order, nature will throw any morbid matter off in the easiest and best way; but we cannot dictate to her where and how it will be done. While we are attempting to improve the circulation and secretions in the liver, a boil or boils will come out sometimes in the posteriors, where we have made no particular attempt to bring out crisis. Sometimes, and whenever it can with safety be done, it appears, nature passes it off by the secretions rather than trouble the body with rash or boils; and we have had patients quite cured by rather active diarrhœa. I have a case of chest disease now being relieved by crisis in the arms, which have been packed as No. 214. Sometimes in such cases a large boil has come in the arm-pit, or near, and cured the patient.

After all, it is impossible to go against nature's laws in curing. If boils or rash are necessary, the patients should rejoice that they have vitality enough to cast the matter off; and in the great number of crisis cases we have had, I have never seen anything but good results by the most severe crisis; and never in the most delicate have any evil results followed, but always the contrary.

Our experience convinces us that we cannot push crisis too much, or too quickly get the morbid matter out of the system. Inflammatory matter cannot but be distressing to the sensitive nervous system, and dangerous to the whole structure; and the sooner it is got rid of, the better; although the withdrawal of it, by reducing the nervous irritation, apparently makes the patient appear weaker; but it is not really so, for the patient then only becomes conscious of the real state of the body. We have often to contend against this idea of becoming weaker under the treatment; and patients often do themselves harm by taking an extra quantity of food, under the idea of keeping up their strength, when in fact the state of the body not only does not require it, but from the lowered power of digestion by their state of health, it is positively injurious. When the body is out of order, it is manifest the powers of digestion and assimilation are impaired, and, until the state of complaint is removed, even a usual amount of food must evidently only further overtax the powers of the viscera. People do not overcome disease merely by eating a larger quantity of food. We never fear the complaint of weakness; it is always, in disease, a precursor of improvement in all cases of chronic disease or complaints of long standing. When there is simple functionary derangement, we often find patients begin to get strength in a few days after commencing treatment.

The only point we fear in crisis is the patient leaving us, and applying to medical practitioners when under it. Medical men do not understand it, or will not recognise nature's own curative work; and, if leeches or stimulants are applied, the healthy operation of nature is stopped, and the inflammatory morbid matter prevented finding an outlet where it is the safest, to be thrown probably on to some weak vital organ, and so cause irreparable mischief. I have had cases who have left me with crisis, or crisis has come on after returning home; the medical man has ordered stimulants and flesh meat, to keep up the strength of the patient; these have added fuel to the inflammatory matter in the system, and the leeches or aperient have combined to so lower the vitality, that in one case it was fatal, and in other cases caused many months of suffering, by stopping nature in her work. There is not, I repeat, the least risk with crisis, if only the most ordinary attention is observed as to diet and washing with tepid water, until nature has performed the cure.

OUR TREATMENT FOR CRISIS.—Crisis, taking place simply from the renewed vitality of the nutritive organs, saves us all anxiety as to its being brought to a safe and successful termination, if only the patient will live in the simple manner it was intended we should do, and take the most ordinary care not to expose the crisis to the air or cold water. If even a patient should not observe this caution, no farther bad results ensue, except retarding recovery. The crisis affects so many parts of the body, according to the nature of the complaints of the individual, that only general rules can be laid down. First, when rash or crisis is on the body, or legs or arms, tepid sponging over only should be used, soaping sometimes to keep the discharge cleared away; but care must be observed not to rub the parts, or it will prevent the new skin from forming. The more crisis is kept from the action of the external air, the better. On rising, take a little soap and hot water, and with a gentle hand and flannel pad well wash all matter away; then apply a dry piece of linen over the part affected, and nothing more.

If very *irritable* in the day, undress and quickly sponge the body over with water at sixty-five degrees, and re-dress as above.

If *smarting*, then apply the water at eighty degrees.

If *burning*, then apply a very gentle warm fomentation, and re-dress as above; *no sponging after:* any cold application will increase the irritation. Have a wet pack, if feverish, for half an hour. No. 221.

Bedtime.—Take off the linen, and put on body bandages (usual calico and flannel); *wet* the calico in ninety degrees. A little hot water should be kept by the bedside, and if unable to sleep, the above process should be renewed. If too delicate to have the body bandage so wet at night, then keep the wet linen on, with a piece of new flannel over. Abstain from flesh meat until the crisis is well out, and drink pretty well of cold water. Do not keep the body too hot.

When the crisis, from much inflammation in the body, does not subside with the above applications, the patient had better keep in bed, throwing off all bandages, with as light covering on as possible. not to be cold; and have the parts attended to as No. 147: if much matter, use 147 with suds. Persons are liable to make the crisis worse by rubbing the parts. No flesh meat while crisis is on. Any boils that do not break when they show that matter is formed may be lanced, and a wet piece of linen kept on, and renewed often, and the matter sponged out. (See list 142, 151, 173½.) Care must be taken to prevent any of the matter or moisture touching other parts. Some boils appear to be coming on, but stop, and go back; but this effects the purpose, as the matter is taken up by absorbents in coming out of the body. Sometimes the crisis will come out again and effect a cure

If crisis is in the legs or arms, apply Nos. 145, 147, 148, as most suitable; No. 143 will relieve the legs, when crisis is out, and when hot. If the crisis does not come out red, which it should do, and not a dark colour, use Nos. 140 and 143 alternately, until it does so. When the parts have done discharging, then the application of silk gloves or stockings, or if on body, a piece of hosiery woven silk should be applied, and kept on the parts night and day, and not removed until the skin is formed and healed; the silk should be kept constantly wet by sponging with tepid water—should have thin, dry merino gloves and stockings over the wet silk; some thin, dry flannel may be put over the silk round the body; the silk covering must not be removed, but if the crisis matter comes through, it can be sponged off with hot soap and water. We have also found wash-leather, kept damp with tepid water, and flannel bandage over, answer very well. When crisis is pretty well over, rest entirely from all treatment, except a tepid wash over in morning, and a sitz No. 106. Better remain in the same locality, as removing to change of air may further retard recovery.

Crisis is always and inevitably beneficial, and will repay for the patience required in passing through; but patience is required in old chronic cases, to wait till perfect recovery. We have seen many astonishing cases of restoration after many years of suffering previous to having crisis.

CRISIS.—When crisis round the body, or any part, has done discharging, put a dry crisis calico, which is merely fine thin calico rubbed soft, and give spinal treatment, as Bath List, varied according to the feelings of the patient—112, 113, 114, 120, 121, 122, 122½, 123, 124, 125, 126, 127, 128, and 230, occasionally 13½, with the above spinal treatment, twice per day, to the limbs only.

HOT WATER FOR RISING TREATMENT.—Have a tin can with a cover, containing ten or twelve quarts of boiling water, taken to the bed-room on retiring to rest. Wrap it in a small blanket, put it in the empty sitz, cover over with mackintosh, and it will be quite hot for morning use.

SWANSDOWN CALICO we now use for bandages, in preference to common calico; it is less liable to feel cold, and more effective. Where even swansdown is not warm enough, we use spongio piline or swansdown calico waterproofed called water dressing, with a flannel end instead of macintosh.

ADULTERATION OF FOOD.

AN INTERESTING LITTLE BOOK ON THIS SUBJECT,
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THE FOLLOWING EXTRACTS WILL SHOW THE IMPORTANCE OF THE SUBJECT:—

" Potted beef is, in nine cases out of ten, coloured by means of bole Armenian.

" Potted herrings generally contain bole Armenian to a very great extent, and are also very frequently adulterated with flour and starch.

" Anchovy paste appears to be even more adulterated than the potted meats (for an account of which the reader is referred to the article *Anchovies*).

" The active chemical substance in bole Armenian is oxide of iron. It is rarely used in medicine, but when taken, it has a tonic and rather stimulating effect. But we must remember that bole Armenian has, in some instances, been found to be adulterated with red lead; and the presence of this active and fatal poison has been more than once detected in potted meat and fish.

" Bottled Fruits.—The property of copper solutions in imparting a permanent and vivid green colour to the liquid used in preserving vegetable substances, has been largely and poisonously taken advantage of by the manufacturers of bottled fruits. The quantity of copper contained in such articles may not be sufficient to produce fatal effects on all constitutions, but serious symptoms of gastric irritation are sometimes produced on children which may assume an alarming character. Some preserved gooseberries, sent by a friend to Professor Taylor for examination, were found to be largely impregnated with copper; indeed, the poison was present in sufficient doses 'to cause colic and vomiting,' and the other painful symptoms of chronic poisoning in its most aggravated form. In his examination before the Adulteration Committee, Dr. Hassall mentioned another instance of this poisonous adulteration. A gentleman wrote to the *Lancet*, giving his name and address, and stating that he had partaken at dinner of some rhubarb tart, which he had noticed presented a very peculiar appearance, for it was much more green than it should be. He partook of it with suspicion, but still did eat some of it; and on accidentally casting his eyes down and looking at his fork, which was of steel, he found the prongs covered with copper.

" The gratitude of the public towards Dr. Hassall ought to be both great and lasting, for the philanthropic patience with which he has examined into the adulterations of all articles of food. That gentleman, after analysing forty different samples of bottled fruits, came to the terrible conclusion that (with only one single exception) all of them were contaminated with copper.

" Flour is not so much adulterated as might have been expected, from the fearful extent to which adulteration is carried in the manufacture of bread. The falsifications practised by the millers principally consist of mixing bad flour with good. Pereira, however, states (1850) that wheat flour is subject to adulteration with various vegetable and mineral substances. Among vegetable substances, he names the following:—Potato starch, the meal of other cereal grains (viz., of maize, rice, barley, and rye), of buck-wheat, and of certain leguminous seeds (viz., of beans, peas, and vetch).

" The numerous other substances which have been used to adulterate wheat flour are chiefly chalk and sulphate of lime—plaster of Paris. White clay and bone-ashes are also said to have been used. Sulphate of copper and alum are mixtures added to buck-wheat flour to improve its quality, and render it more fitted for making bread.

"There is no doubt that flour, before it is ultimately made into bread, suffers a double adulteration. First of all, the miller adds either a cheaper material, or mixes with it some chemical substance, for the purpose of improving the appearance of his goods. Thus the miller frequently adulterates his flour with alum, and the baker again adulterates it, by putting a little more to it.

"BREAD.—The adulterations consist principally of the introduction of alum; sometimes it is used in large quantities. In bread that has been carelessly mixed, a crystal of alum has been discovered the size of a large pea, and in other cases large crystals of alum have been found. To the poor, whose daily food consists almost entirely of bread, this shameful adulteration is productive of much hardship. The working man, instead of finding in his daily allowance the nourishment which he pays for, gets, on the contrary, an enfeebled power of digestion, and, consequently, an inferior power of performing work. The effect of the alum is to augment the whiteness and firmness of bread made from interior kinds of flour. Home-made bread has a yellowish tinge, which alum would remove. The use of alum is forbidden by law, but it is frequently employed, under the name of '*stuff*.' Whatever doubts may be entertained as to the ill effects of alum on the healthy stomach, none can exist as to its injurious effect in cases of dyspepsia.

"Alum acts chemically on the animal tissues and fluids. If a solution of it in water be added in certain proportions to albumen, it causes a white precipitate. It also forms insoluble combinations with milk and gelatine. These phenomena explain the action of alum on the fibrinous, albuminous, and gelatinous constituents of the living tissues. The immediate topical effect of a solution of alum is that of an astringent; it causes the smaller vessels in the body to contract. By diminishing the diameter of the blood-vessels, it checks the supply of blood, and so produces paleness of the parts. It is by these local effects that 'alum, when taken internally, causes dryness of the mouth and throat, somewhat increases thirst, checks the secretions of the alimentary canal, and thereby diminishes the frequency, and increases the consistency of the stools, as observed by Wibmer in his experiments made on himself with alum, in doses of *three grains*, dissolved in five drachms of water, and taken several times during the day.'

"CAKES, PASTRY, &c.—Cakes, of which the plum-cake may be taken as the type, may be regarded as a rich variety of bread, though, in common parlance, they are considered distinct from this. They are composed of wheaten flour, butter or lard, eggs, sugar, raisins, currants, almonds, &c. They form a most indigestible kind of food, totally unfit for children, invalids, and dyspeptics. Their indigestible quality is principally derived from the butter or lard which they contain. The adulterations in cakes, &c., consist almost entirely of the adulterations in the flour, sugar, butter, or lard with which they are made.

"SUGAR.—The impurities are either organic or inorganic. The organic impurities consist of fragments of the cane, grape-sugar, albumen, an insect peculiar to cane-sugar, fungi, woody fibre, and starch-granules. The inorganic impurities have been found to consist of lime, lead, iron, sand, and grit. All of these impurities arise from the imperfect preparation of the juice before allowing it to crystallize. Grape-sugar is a low sugar, deficient in sweetening powers; therefore it is evident that by admixture with grape-sugar, that of the cane must be greatly depreciated in value.

"Dr. Pereira states that brown sugar is extensively adulterated with sugar prepared from the potato-starch as well as with that made from sago-flour (these substances are analogous with grape-sugar). Potato-sugar is manufactured at Stratford, in Essex. It is clammy, and wants that sparkling crystalline appearance possessed by West India sugar, is much less sweet than the latter, and possesses a bitter, somewhat unpleasant taste.

"We have above stated that one of the impurities of sugar was an insect peculiar to the juice of the cane. The discovery of this animalcule is due to Dr. Hassall, who was the first to employ the microscope in his researches into the adulteration of sugar. We cannot do better than borrow his description of it. This insect is a beetle-like animalcule, of the genus *Acarus*.

"'The sugar acarus approaches somewhat, in organization and habits, to the louse and the itch-insect itself, which are also included in the genus *Acarus*. The sugar mite is in size so considerable that it is plainly visible to the unaided sight. When present in sugar it may be detected by the following proceeding:—Two or three teaspoonfuls of sugar should be dissolved in a large wine-glass of tepid water, and the solution allowed to remain at rest for an hour or so; at the end of that time the animalcules will be found, some on the surface of the liquid, some adhering to the sides of the glass, and others at the bottom, mixed up with the dark and copious sediment.'

"For the consolation of our readers, we are happy to announce that this insect is never found in purified, *i. e.* lump sugar. It owes its existence and nutriment to the albumen which, as we said before, is always present in inferior sugars."

SWEETMEATS AND LOZENGES, and Cough mixtures, are all adulterated with ingredients dangerous to life. The raspberry and strawberry flavoured lozenges have not a particle of the juice of the fruit in the flavour—being given by chemical compounds entirely; and as to the flavoured syrups, they are vile mixtures simply made for sale. (See book.)

"MILK.—The Honourable F. Byng, in a pamphlet on the Sanitary Condition of the Parish of St. James, Westminster, gives the following description of the state in which he found the cow-sheds of the district. 'Two of these sheds (of which there are fourteen in the parish) are situate at the angle of Hopkins and New-street, Golden-square, and range one above the other, within a yard of the back of the houses in New-street. Forty cows are kept in them, two in each seven feet of space. There is no ventilation save by the unceiled tile roof, through which the ammoniacal vapours escape into the houses, to the destruction of the health of the inmates. Besides the animals, there is at one end of the sheds a large tank for grains, a store place for turnips and hay, and between them a receptacle into which the liquid manure drains, and the solid is heaped. At the other end is a capacious vault with a brick partition, one division of which contains mangel-wurzel, potatoes, and turnips, and the other a dirty, yellow, sour-smelling liquid called brewers' wash, a portion of which is pumped up and mixed with the food of the cows. The neighbours are subject also to the annoyance of manure carts, which frequently stand some time in front of their houses; and when the mouth of the vault is opened to admit the ingress of the brewers' wash, a burning sour smell is described by them as pervading the dwellings. After the buildings have remained closed for the night, the atmosphere within becomes heated, foul, and unwholesome. In summer-time, the smell is most offensive. Decomposition of the vegetable matters in the vault is also stated to be frequent, and the stench thence arising insufferable. At the opposite side of the houses, in the same street, is another shed, with even less possibility of ventilation than in those just described. Thirty-two cows stand side by side, two in each space of seven feet, as above. In Marshall-street there is a third establishment, containing twenty-eight cows. In a wall on one side, overlooking a yard in which is a slaughter-house, are several grated openings, but they are carefully covered with pieces of sacking, as ir to prevent all possible admission of air. In the shed are receptacles for vegetables and grains as before. The manure tank holds twelve tons, and that for brewers' wash 600 gallons. It is to be remarked, that even the manure, from the nature of the food supplied to the cows, acquires a peculiarly unhealthy and offensive odour, altogether dissimilar to that from farm-fed animals. In this atmosphere, reeking with all these pestiferous effluvia, the poor creatures are kept close shut up night and day, till, their milk failing, they are consigned to the butcher. The effects of this system of feeding, impure air, and deprivation of all exercise, are thus described from actual inspection of four cows, which the keeper said were suffering from the old disease.

"'There was inflammation of the mucous membrane of the mouth, fauces, and gullet, a catarrhal discharge from the nostrils, and such prostration of the muscular system, as to render the animals unable to remain in a standing position for any length of time. The mucous membrane of the mouth is sometimes so blistered as to prevent the animals from taking food. Swellings of the udder appeared, attended by a change in the quality and deficiency in the secretion of milk. The feet also became much diseased and swollen; general emaciation followed, in which the animals continued for an indefinite period, or till death. Four months prior to this visit, the owner of one of these sheds lost thirteen cows by disease.

"'A Dutch cow was pointed out, which was evidently in a state of marasmus, her head hanging nearly to the ground; the horns cold; the ribs staring through the hide on each side of her emaciated body, on which the hair bristled and stood erect. Notwithstanding this prostration of the vital powers, the cow was regularly milked with the others, furnishing a daily supply of ten quarts.' Dr. Normandy, in his evidence before the Parliamentary Committee, tells us that he witnessed, in Clerkenwell, a spectacle which prevented him from tasting milk for six months. He saw about thirty or forty cows in the most disgusting condition one can possibly imagine, full of ulcers; their teats in a most horribly diseased ulcerated state, and their legs full of tumours and abscesses; in fact, it was terrible to look at. A fellow was milking these poor cows in the middle of all this purulent abomination. The litter on which the beasts stood was a mass of fuming and fermenting matter, resembling a dung-heap.

“The animals kept by a great many London cow-keepers are in the same condition as that described by Dr. Normandy. There can be no doubt that diseased matter is thus introduced into the milk.

“WATER in its natural state is never perfectly pure, rain-water being contaminated by the impurities which it takes up in falling through the air, spring-water by those with which it meets in rising from the earth. The natural colour of water in large masses is blue, but it is only in certain parts of the Pacific and Mediterranean that the colour is observable. In our muddy English rivers we find it grey or brown; sometimes, when the amount of vegetable matter which it contains is very great, it appears almost black; and off the British coast, the yellow matter which it holds in solution combines with the native blue, and gives it a green tint. The very clearest spring-waters, even after being filtered, are never pure. Water is the only substance which, to be fit for consumption, must not be pure; that is to say, it must contain some atmospheric air. Pure water is, of course, a chemical compound, and contains no air whatever. But such water is unfit for consumption, because it contains no air; it is indigestible, heavy, and in fact it would appear that distilled water, which is pure water, and which is supplied to the navy occasionally, from stills erected for the purpose on board, is actually so vapid, that after a few days' use the sailors will hardly drink it. Neither is it prudent that such distilled water should be used, for, by reason of its containing no air, it has a great tendency to take air from the medium where it is kept; so that if distilled or boiled water, which contains no air, is kept in a ship's hold, or in an impure dwelling, it will absorb precisely the quantity of air which it can absorb, namely, five cubic inches per gallon, and become perfectly putrid and fœtid, or contaminated by organic matter. Water should always be kept, when it has been distilled or boiled, in perfectly ventilated rooms or pure receptacles, or else it will become as foul as or more foul than before. Dr. Stenhouse, three or four years ago, found that charcoal had the power of purifying air. Acting upon his data, Dr. Normandy has since found that charcoal has the same power of purifying *aërated* water which contains foul organic matter, provided only the water is aërated; that is to say, contains air.

“COCOA AND CHOCOLATE.—It is computed that cocoa is used as an article of diet by at least fifty millions of the human race. Its chief consumption takes place in Spain, Italy, France, Central America and Mexico. It is an extremely nutritious substance, closely resembling milk in its composition. Thus milk when dried by evaporation, and the cocoa-bean when dried, consist respectively of—

	Milk.	Cocoa-bean.
Casein or gluten	35	21
Fat	22	51
Starch or sugar, &c.......	37	22
Ash or mineral matter....	4	4
Theobromine............	2	2
	100	100

“Mr. Mitchell, writing of the adulterations of cocoa, says, ‘Chocolate is adulterated with flour, potato-starch, and sugar, together with cocoa-nut oil, lard, or even tallow.’ The mineral substances employed in the making up of chocolate are, according to Mr. Mitchell, some of the ochres, both red and yellow. These earths are used for the purpose of giving weight, and also to give the colour of cocoa to the vast quantities of starch with which the chocolate and cocoa is adulterated. Dr. Normandy, who has devoted much time and patient research to the adulterations of chocolate, expresses himself very strongly on the subject. Many of the preparations of the cocoa-bean, sold under the names of chocolate, of cocoa-flake, and of chocolate powder, consist of a most disgusting mixture of bad or musty beans, with their shells, coarse sugar of the very lowest quality, ground with potato-starch, old sea biscuits, coarse branny flour, animal fat (generally tallow, or even greaves). Cocoa powder is sometimes made of potato-starch, moistened with a decoction of husks, and sweetened with treacle; chocolate is also made of the same materials, with the addition of tallow and ochre. Chocolate, in which either brick-dust or red ochre had been introduced, to the extent of twelve per cent., is commonly sold as a pure and genuine article. An instance is given of chocolate having been purchased which contained twenty-two per cent. of oxide of iron, the rest being starch, cocoa-beans with their shells, and tallow. It is a common practice to extract from the cocoa-bean the rich fat or butter which it contains, for the purpose of selling it to druggists, to be used as a medical preparation, and then, in order to replace it in the chocolate, animal grease and tallow is employed. Genuine chocolate is of a dark *brown* colour; that which is adulterated is of a red hue. The only way to insure purity is to buy cocoa-beans; crush and stew them, and skim off the oil.

"TEAS are very much adulterated, not only in England, but also in China. From Mr. Fortune, who himself witnessed the process employed by the Chinese for giving an artificial colouring to green tea, we gather the following particulars of the process:—'The superintendent takes a portion of Prussian blue, throws it into a porcelain bowl, not unlike a mortar, and crushes it into a very fine powder; at the same time a quantity of gypsum is burned in the charcoal fire over which the tea is roasting. This gypsum having been taken out of the fire after a short time, readily crumbles down, and is reduced to powder in the mortar. The two substances thus prepared are then mixed together, in the proportion of four of gypsum to three of Prussian blue, and form a light blue powder, which is then ready for use. This colouring matter is applied to the tea during the last process of roasting. About five minutes before the tea is removed from the pans, the superintendent takes a small porcelain spoon, and with it he scatters a portion of the colouring matter over the leaves in each pan. The workmen then turn the leaves rapidly round with both hands, in order that the colour may be equally diffused. To fourteen pounds of tea about one ounce of colouring matter is applied. During this part of the operation the hands of the workmen are quite blue. The Chinese acknowledge that tea is much better without such ingredients, and that they never drink dyed tea themselves; but remark that foreigners seem to prefer having a mixture of Prussian blue and gypsum with their tea, to make it look uniform and pretty; and as these ingredients are cheap enough, they have no objection to supply them, especially as such teas always fetch a higher price. The adulterated tea manufactured in China under the appropriate name of lie tea, and of which half a million pounds weight is imported annually into this country, consists of the sweepings of the tea warehouses, mixed with rice-water, and rolled into grains. It is made either black or green, and with the acknowledged purpose of adulterating other teas. Genuine teas yield only from five to six per cent. of ash, while lie tea yields from thirty-seven to forty-five *per cent.*, thus indicating the large amount of dust and other impurities with which it is mixed."

MUSTARD is so notoriously adulterated that it is said a pure sample is not to be bought; the best way to have it genuine is to purchase mustard seed, and have a small coffee-mill to grind it; and although it will not have such a bright appearance, it will be pure. For mustard plaisters, or mustard foot-baths, mustard husks can be bought of mustard-makers at 10s. per cwt. (See book.)

"GROUND PEPPER is so much adulterated, that the only method of obtaining it in a pure state is, like coffee, to buy the article in the grain, and reduce it to powder by a hand mill.

"The principal substances used by the dealers to defraud the purchaser are linseed, wheat flour, mustard seed, pea flour, and ground rice.

"Some years since it was not uncommon to meet with artificial peppercorns. Accum, in his celebrated 'Death in the Pot,' says, that he has examined large packages of both black and white pepper, and has found them to contain about sixteen per cent. of this artificial compound. This spurious pepper is made of oil cake, common clay, and a portion of Cayenne pepper, formed into a mass, and granulated by being first pressed through a sieve, and then rolled in a cask. The reader will perhaps remember that a somewhat similar fraud was practised with chicory, by compressing in a machine until it resembled the coffee berry.

"PICKLES.—On turning to Accum's invaluable work on the adulterations of food, we read—'Vegetable substances preserved in the state called pickles, by means of the antiseptic power of vinegar, whose sale frequently depends upon a fine lively green colour, and the consumption of which, by seafaring people in particular, is prodigious, are sometimes intentionally coloured by means of copper. Gherkins, French beans, samphires, the green pods of capsicum, and many other pickled vegetable substances, oftener than is perhaps expected, are met with impregnated with this metal. Numerous fatal consequences are known to have ensued from the use of these stimulants to the palate, to which the fresh and pleasing hue has been imparted, according to the deadly *formulæ* laid down in some modern cookery books, such as boiling the pickles with half-pence, or suffering them to stand for a considerable period in brazen vessels.'

"VINEGAR.—The most common adulteration of vinegar is to mix the inferior malt vinegars with pyroligneous acid. This imitation has not so fragrant an odour as the genuine article.

"The dark colour of the vinegar sold in England is owing to the presence of burnt sugar, which is added solely for colouring purposes. Why this absurdity should be persisted in it is impossible to say, since the most valuable wine vinegars are principally distinguished for their light, bright, and transparent clearness.

"The permission which has been accorded by the law to manufacturers to add a small quantity of sulphuric acid to their vinegar, has, unfortunately, been largely taken advantage of for the purpose of giving a false strength to otherwise worthless produce. The weak vinegars, which they sell at a low price, are, without greatly increasing their cost, made to equal in acidity the better class of manufactures, by employing sulphuric acid.

"Tobacco.—The French tobacco contains from four to seven per cent. of nicotine. It is not many years since an immense sensation was created in Europe by a murder committed by means of nicotine. The Count Bocarme, a Belgian nobleman, to possess himself of certain estates, poisoned his brother-in-law with an infusion of tobacco. Whenever the use or application of this plant has proved fatal, it is always owing to the action of this poison. When applied as a poultice to wounded or diseased surfaces it may occasion the most alarming symptoms. A youth afflicted with ringworm was killed by having tobacco leaves applied to the sore.

"As a poison, nicotine is almost as powerful as prussic acid. A single drop given to a dog was sufficient to destroy life; and Orfila, on examining the stomach of the animal on which the experiment had been made, found that the mucous membrane of the stomach was greatly inflamed, and of a vivid red throughout. Dr. Pereira considers that it is not safe to administer medicinally more than twenty grains of tobacco; and as the strongest leaves do not contain more than eight per cent. of nicotine, the amount of poison present is very small. Dr. Copeland lost his life from employing a dose of thirty grains of tobacco. Nicotianin is the concrete volatile oil of tobacco, obtained by distilling the leaves. It is also very poisonous. Hermbstädt swallowed a *grain* of it, which produced nausea, giddiness, and inclination to vomit. The smoke drawn into the mouth during the act of consuming tobacco, either in a pipe or as a cigar, has been analysed by Melsens. In one hundred grains of Virginian tobacco he detected the alarming quantity of three-quarters of a grain of nicotine.

"Drugs.—In health we have to contend against the adulterations in our daily food; and when, at last, they have rendered us ill, then we have to fight against the adulterations of the medicines that are given for our recovery. The adulterations of drugs may be divided into three classes: the adulterations which are practised upon the drugs before they reach this country; the adulterations practised by the drug-grinder, or person whose business it is to prepare them for the market, by reducing them to a powder; and the adulterations committed in the shop of the retailing chemist. All the gentlemen examined by the Select Committee on Adulterations of Food, &c., agreed in saying that by far the greater proportion of that adulteration was due to the drug-grinder."

FALLACIES OF THE DRUG MEDICATION PRACTICE, according to the showing of its own professors:—

"To the aid of allopathy the untiring energy and talent of ages have been brought, and great are the advancements in Chemistry, Anatomy, Physiology, and Pathology, in inventions for investigation of disease, in the history of disease itself, in social science; and incalculable the philanthropy and benevolence displayed by the members of its ranks in this and other times. Yet, says Dr. Williams, the author of the able work on 'The Principles of Medicine,' in his introductory chapter—'Compare the state of the practice of medicine with that of anatomy, physiology, chemistry, the great fundamental or preparatory studies. How minute, how precise, how connected and definite are these! Yet how loose, indefinite, uncertain, unconnected is the practice of our art! To the public it appears altogether vague—without any acknowledged principles. Is there any wonder then that quackery should triumph? that the public show their want of faith in legitimate medicine by their ready belief in any novelty that is not legitimate? The public may show their ignorance by such credulity, but they show also the want of something plain and trustworthy in regular medicine.'

"Again: Lord Ebury stated in his place in the House of Lords, in the discussion on the Medical Act, 'that they were about to entrust medical practice to a set of men who declared they had no faith in their system. Dr. Bailey, on his death-bed, doubted whether the medicine which he had prescribed had not done more harm than good. Dr. Chambers, in a funeral oration upon Dr. Williams, said, that the deceased had no confidence in medicine; and Sir J. Forbes stated that the present practice of medicine was so entirely unsatisfactory, that he hoped some new school might be set on foot.'

"Dr. James Johnson, in the *Medical Chirurgical Review*, says that it is his conscientious opinion, founded on long observation and reflection, that if there was not a physician or surgeon in the world, there would be less mortality than now prevails. The celebrated Magendie says:—'Let us no longer wonder at the lamentable want of success which marks our practice, when there is *scarcely a sound physiological principle amongst us!'* Frank declares 'that thousands are annually slaughtered in the quiet sick room.' Dr. Paris acknowledges that 'the file of every apothecary would furnish a volume of instances, where the ingredients of the prescriptions are fighting together in the dark.'

"Dr. Bushnan, the editor of the *Medical Times*, calmly tells the medical man to fold his arms and look on, while nature does the work; 'for,' says he, 'the modern triumph of our art (triumph, forsooth!) is more in the happy forbearance exemplified in our negative treatment than in the positive success of any heroic remedy; i.e., look on, gentlemen—do nothing; and take my word for it, you will be infinitely more successful as practitioners than by giving any amount of physic, *secundem artem*.'

"Dr. Pereira, a most distinguished medical writer, agrees in opinion with Sir Gilbert Blaine, 'That in many cases the patients get well *in spite of the means employed;* and sometimes, when the practitioner fancies that he has made a great cure, we may fairly assume the patient to have had a *happy escape*.'

"Still it may be urged, this allopathic system does cure. We see, every day, persons getting well under it. If it does good to them, why should it not suffice for us,—for all? Let us hear what Sir John Forbes, one of her Majesty's physicians, says, on this head, in his *Art and Nature in the Treatment of Disease:—*

"1st.—'That in a large proportion of cases the *disease is cured by nature, and not by them.*

"2nd.—'That in a lesser but still not a small proportion, the *disease is cured by nature in spite of them.*

"3rd.—'That, consequently, in a considerable portion of diseases, it would fare as well or better with patients in the actual condition of the medical art, as now generally practised, if all remedies, at least all *active remedies*, especially DRUGS, were abandoned.

"'We (Sir J. Forbes) repeat our readiness to admit these inferences as just, and to abide by the consequences of their adoption. We believe they are true. We grieve sincerely to believe them to be so; but, so believing, their rejection is no longer in our power; we must receive them as facts, until they are proved not to be so. What, indeed, is the history of medicine but a history of perpetual changes in the opinion and practice of its professors, respecting the very same subjects—the nature and treatment of diseases? Who, amongst us, of any considerable experience, and who has *thought* somewhat as well as *prescribed*, but is ready to admit that in a large proportion of the cases he treats, whether his practice in individual instances be directed by precept and example, by theory, by observation, by experiment, by habit, by accident, or by whatsoever principle of action, he has no *positive proof*, or rather no *proof whatever*, often indeed very little probability, that the remedies administered by him exert any beneficial influence over the disease? We doubt if we should greatly, if at all, exceed the bounds of truth, if we said that the progress of therapeutics (i.e., what to do in order to cure the patient) during all the centuries that have elapsed since the days of Hippocrates, has been less than that which has been achieved in the elementary sciences of medicine during the last fifty years; in other words, there has been more done in those things which are mere aids in medical knowledge, during the last fifty years, than in therapeutics, or knowing what will cure a disease, in two thousand years. This department of medicine,' adds Dr. Forbes, 'must indeed be regarded as yet in its infancy. It would doubtless be going far beyond the truth to assert that there is no certainty in medical therapeutics; and that in *the whole practice of medicine* (*in as far as this consists in the administration of drugs*) *is a system of traditionary routine, conventionalism, haphazard, and guess-work; but it is not going beyond the truth to assert that* much of it is so.'

"As to the large dose, says a writer in the *Medical Times*:—

"'We could present rather a serious tragedy if we were to collect all the cases of poisoning by huge masses of powerful medicine by the disciples of this physician, and of sanguinary homicide by the invitations of that bold surgeon, *though they may both enjoy high repute.* Could all the consequences from the use of mercury alone be brought together and comprehended in one view, it would be impossible for the human eye to look upon a scene of greater devastation and horror.

"'He, who, for an ordinary cause, resigns his patient to mercury, *is a vile enemy of the sick;* and if he is tolerably popular, will, in one successful season, have paved the way for the business of life; for he has enough to do *ever afterward to stop the mercurial breach of the constitution of his dilapidated patients.*'

"Dr. Bell, of Edinburgh, remarks, 'that the favourite mode of administering metallic and other remedies in a concentrated form is contrary to reason and the teaching of nature; inasmuch as nature, when preparing a remedy, as in the case of mineral and medicinal springs, invariably presents it in a state of remarkable dilution or attenuation, such being apparently the most favourable form for its ready absorption. So also, in the case of a medicinal herb, we find it diffused throughout the plant in a state of minute division, instead of occurring in the form of an extract, such as is sedulously prepared and administered, in preference to the state in which it exists in the capillaries of the plant.' As to large doses, he observes, 'Take, for example, iron. We know that the entire blood of an adult does not contain more than thirty grains of iron, and when this is deficient in disease, what use can there be in giving a large quantity where so little is required? I have repeatedly seen so small a dose as the eighth of a grain of the extract of Belladonna taken into the stomach of a young person cause full dilatation of the pupil. Now, if we consider how extremely minute must be the portion of even this very small dose when circulating through the blood-vessels which comes into contact with the nerves of the iris, we may form some conception of the susceptibility of our frame.'"

TREATMENT FOR HEMORRHAGE (SPITTING OF BLOOD) FROM THE LUNGS.—This disease is known when the blood vomited is of a bright red colour. As soon as possible, lay the patient on the bed or couch on the back, with the head high, and place No. 153½ to feet; wet cold cloths to head, and then squeeze out a towel out of cold water, double it in four, and lay it on bare chest, and also about throat; then lay some dry flannel over towel, and keep renewing the towel out of cold water as often as it feels warm; 143 or 141 would also be useful at same time. The patient should drink frequently of cooling drink (see receipt, page 128), but make it *doubly* strong of acid; keep very quiet. After the above treatment has abated the bleeding, then put on 181, squeezing the calico part out of cold water, and renew the calico with cold water whenever warm. Take very light diet, and all cold. The following day give 48 and 106, and then continue for awhile; as general treatment, the directions given for consumption (incipient), page 178, till strength is regained. Diet 211 good.

EPILEPSY.—This disease is very difficult to cure. We have had successful cases of cure. The case, page 184, will show the treatment in that instance, and the following is a general direction:—

On rising, a sitting bath fifteen minutes, and dripping sheet 65 degrees; sitting bath, 70, until it can be borne cold, comfortably. Ten o'clock, head bath in water nearly cold, 65 degrees: bathing the temples with a sponge at the same time, twenty minutes. If a female, the back hair need not be undone, as the water remaining in the hair keeps the head cool. After the head bath, use a foot bath, in water at first 65 degrees, for ten minutes. Great attention must be paid as to the quantity of food taken; a sparing diet is necessary, for whenever the stomach is at all overcharged, there is greater liability to an attack, while the person will not suffer from taking a less than ordinary quantity of food. Pastry, hot beef, ham, and every article of food not very easy of digestion, are against recovery; studies and confinement should be entirely avoided; No. 52, for five minutes, once a day, good.

Wear body bandage night and dav for a week or two, and then leave it off for a few days; and if cold, take it off and wring it out of warm water. Ladies will understand when to leave off the treatment for a few days. I feel much confidence in these directions, if persevered in, from seeing the good results in cases. Diet is very important, and I cannot give better directions than my book. Any one liable to epileptic attacks should be very strict in diet, and make it a matter of conscience to be so. Nothing should be taken after seven, p.m. Drink about four tumblers of water per day, by little at a time, and very little over meals. Avoid all seasoned dishes and tea. Cocoa in the nibs good—coffee, and all stimulants of every kind bad, —water best. It is only by a perseverance in these plans a cure can be expected. After the first week or two, pack three times per week, and instead of pack at eleven, use a dripping sheet or shallow. Modify the treatment in delicate subjects.

SUPPLEMENTARY REMARKS, with a few articles which have been omitted insertion previously. I have given a short extract from the remarkable and interesting work, by Sir John Forbes, on Nature and Art in the Cure of Disease; which shows that some of the faculty, and those of high standing in the profession, are aware how much mischief is done by practitioners not acknowledging the curative power inherent in the living body;—Sir John describes it, very appropriately, as the conservative power of nature. The experience we have had in the treatment of the hundreds of cases of disease which have come under our charge, this year, corroborates those remarks—that whenever the medical adviser presumes to dictate to nature, instead of studying her laws, and gently helping her infirmities, where he can discover them, he is sure to do mischief, and often irreparable mischief. For instance, to attempt to rouse vitality by strong measures, when very little exists, is very much like poking the last spark of fire out of the dying embers in the grate; but how often this is done, is clear by the faculty's own theory. The doctor thinks the blood wants more iron to stimulate; he forthwith gives as much iron mixture in a dose as nature would supply to the frame, by natural aliment, in a month; and he repeats the dose daily, perhaps for weeks distressing and poisoning the body, until he finds out that medicine does not cure, and he then alters the mixture. The bowels do not act, either from want of blood or from want of bile or warmth; he gives as much colocynth or mercury, to supply the deficiency of the natural stimulant, in one dose as Nature would supply in weeks; the dose has sickened the organs, and they forcibly expel the offensive physic at all hazards of injuring the absorbent and mucous lining of the parts. Nature will not own the curative power of the physic. A surgeon lately came to me, to inquire into our system of Hydropathy, with a view to practising; and requested information. I began by saying that it never enters into our heads that water can cure disease; and just as I should advise a medical allopathic practitioner to cast out of his mind, when he leaves his college, that he is going to cure disease by physic, the lancet, blisters, &c., so I should advise any one studying to practise Hydropathy to leave out of their calculations that water in itself would give him a power to do so. It is the *vis medicatrix*, the medical power left in the system, be that more or less, which is to be nursed and gently helped; and it is this power which alone will cure. To attempt to evoke a power in the debilitated frame which does not exist, is simple ignorance of the nature of the frame. But so it is; doctors, allopathic, homœopathic, and hydropathic, are educated to cure disease, and restore the diseased or worn-out frame. The public superstitiously believe in their power to do so, seldom thinking or judging for themselves during the process of the attempt. The most destructive means are submitted to, until, as one of my patients told me yesterday, his medical advisers said they had exhausted all their remedies, and could do nothing more for him. He had been under several men of high standing in a large town; one had tried one scheme of medicine, another a new plan, all to force nature to do what they wished to be done; the last had dosed the patient with hydriodas potassæ, but nature would not own its curative powers, and only was more distressed with its presence. When practitioners of all systems of cure will come down from their scientific chair and own nature's power of cure, carefully watch and study her operations, and see how she guards against mischief, and repairs diseased parts, they will succeed in making friendship with her, and she will teach them many secrets not acknowledged in the London Pharmacopeia. But this is a hard and humble pill to take, and few but old practitioners, such as Sir John Forbes, who has now done with practice, have courage to brave public opinion, and honestly own they have no curative power in their possession, and can only be humble servants to this conservative power of nature. The simple want of heat is one great cause of suffering and ill-health in thousands; and this can often be remedied simply by thicker clothing and more care in not exposing the body to cold when feeble. So simple a remedy is, however, so little esteemed, that the doctor who told his patient he only wanted a thicker coat and a flannel waistcoat, and not his purgatives, would have little chance of getting a living by his practice. Sir John Forbes truly says, the public force practitioners into a line of practice against their better judgment.

I have had cases of invalids who have never known what good health is in the autumn, winter, and spring; they have had no disease upon them, and so their doctors have told them; but they have never been well, except in summer. Here was cause and effect plain enough; the doctor knew it as well or better than we did, but he dare not tell them that if they would clothe more in accordance with the change of the seasons, and would be more careful in their diet, especially at times of the year the functions of the body, in this uncertain climate, are less able to perform their work. If he did so, they would indeed think they had paid for advice very foolishly. No, they must have something to take that will save them the trouble and expense of clothing, or the necessary self-denial in habits of life. It is now the first of November. Patients are coming almost daily, broken down in health; some in the last stage of disease, clad precisely as in summer; eating as much as they can, under the idea of supporting life, when at the same time the stomach wants entire rest, if it was possible to afford it; but as that cannot be done, requires the least possible amount of work, until it has regained its abused power,—abused by over-eating, or by physic, stimulants, tobacco, cold, or hardships.

The medical art, in all ages up to the present time, is looked upon by mankind as requiring a great amount of learning to understand, and powers little or not at all short of the wizards of old. Men like Sir John Forbes deserve the thanks of their species for endeavouring to expel this delusion, so far as regards ordinary cases of derangement of health, and pointing out the wisdom of people studying their frames and the simple laws of nature. I have had numbers of cases of functionary disorder cured in two or three weeks, and sometimes in less time, simply by teaching the patients how to wash their bodies, to clothe properly, and to live on simple natural diet. Some of these cases have been quoted as marvellous cures, beating the doctors out and out, when, in fact, there has been no science employed or called for; and their doctor would have done the same for them, if they would have submitted to his advice, in a similar way. People should remember, life is heat, and without heat the body dies. With lowered amount of heat, the engine will not work; the wheels will not turn but by force, and the engine often breaks in the continued attempt. Where heat cannot be got by exercise and by strong blood-making powers, then try other and simple means; but do not attempt to work the engine of the body without heat,—it cannot be done. One word more: do not try to get heat by alcohol—that is impossible; the momentary heat gained is soon lost.

Bleeding for inflammation is diametrically opposed to the recovery or restoration of nervous vitality, and nothing but the restoration of this vis vitæ, or power of life, can subdue inflammatory action; yet the plan of further reducing that power, by prostrating the system, is now in full practice: the quantity of blood in the body may be reduced for a few hours, or a day or two, but nature soon fills the vacuum, but not with such good blood as before; she has been weakened, and the power to make it is reduced. Bleeding always lays the foundation of weakened vascular action, and of disease to be developed on the first trial of the constitution.

Braces and Garters.—These appendages of dress are far more injurious than is generally known. Braces tend to cause the wearers to stoop, and so contract the chest. A pair of cloth straps, set on seven inches apart, and placed just on the top of the hips, will keep the trowsers in a comfortable position far better than braces; and have a further advantage over braces in supporting the muscles of the hips and back, leaving the body free and more inclined to throw the trunk back. If the straps are placed higher than the point of the hip, they will feel tight and uncomfortable round the waist, or if placed more than seven inches apart; the straps should be two inches broad where they are set on, and brought to one and a quarter at the ends, with a one and a half wide buckle. The ordinary fashionable plan of having no waistbands to trowsers, and buttoning up the front, with the waistcoat only just to come to meet the trowsers, and the waistcoat only to button a short way up, is a very absurd mode of dress for this country, except during the warmth of summer. Such fashions leave the viscera unprotected in cold weather, and is the fruitful cause of chest, stomach, and liver complaints. Unless the vital warmth is kept up in the nutritive organs, it is impossible they can act properly; the neglect of such simple and obviously necessary precautions keeps thousands in a chronic state of ill health. On the vitality of the plexus of organic nerves in connexion with the stomach, depends the power of digestion. Dyspeptic persons will often feel a coldness there externally, even when warm in other parts of the body; and when this is the case, it is utterly impossible good digestion can go on. Our No. 76 or 77 is here useful to invalids; and great benefit will be felt by using No. 77 in bed. Trowsers should be made what is commonly called with fall-down, which gives a good broad waistband; and they should never be made tight: I have mentioned this before. Disease often results from trowsers made to fit tight in the fork. Garters prevent the return of the venous blood from the feet and legs; and are a cause of varicose veins in some, and always and inevitably injurious in all. A patient, to whom I was naming this lately, said he had had a hard tumour caused by the garter, which Sir B. Brodie had excised. Garters tend to cause cold feet.

THE CAUSE OF SUDDEN ATTACKS of fever, inflammation, dropsy, apoplexy, paralysis, and other diseases, is owing to a simple principle. From improper diet, stimulants, tobacco, over-fatigue, or anything which causes indigestion, the mucous membrane lining the alimentary canals becomes inflamed and in a diseased state. All food taken while the organs are thus incapable of performing their natural offices does not afford proper nourishment to the body, but supplies an imperfectly prepared material to supply the waste always going on, and which the nutritive powers of the body will supply with unhealthy material, when good cannot be had; otherwise, if the organs could not supply any material except when in a perfectly healthy state, life would soon be brought to an end on every fit of indigestion. The Creator, however, has endowed the body with a conservative power and great powers of endurance, before it succumbs either to unhealthy aliment or the vicissitudes of climate or mental pressure; but there is a limit to this power of endurance, and in some more than in others. Here again, however, we see the beneficent care and the justice of God; for it is notorious that those who have been brought into the world with slight or delicate frames often live out many stronger persons. The explanation is this:—the delicate sooner feel the effects of inflammatory action in the mucous membranes; they are sooner brought to a stand; they are reminded of danger sooner, and take measures of precaution, by taking rest, stopping the supplies, or moderating them, until the organs have had time to recover; they cannot bear the deranged state which stronger persons can. Thus it follows that the stronger frames can bear up longer, and often *appear* in fair health, when in fact it would be seen by the state of the fauces and the tongue, the lips and the eyelids, that there is that amount of inflammatory action in the mucous membrane linings, that only requires the exciting cause of some excess, either in over-fatigue or diet, to concentrate the storm on the weakest part of the frame; and even then, such is the conservative power inherent in the frame, that the disease is thrown off by fever, inflammation, dropsy, &c.; but, from the unnatural, cruel treatment in physicking, blistering, setoning, and the many ways of attempting to drive out the disease, the body is left a wreck. The contrast in the treatment of the body by these means, and the gentle hydropathic plans, will soon commend Hydropathy to all thinking, unprejudiced persons. Mucous inflammatory action precipitates disease on vital organs, when they have been weakened by its continuance, and no longer able to resist the sympathy with the diseased parts. (See pp. 234—236.)

CHOKING.—"On Monday last, Mr. J. Parry Cole, a professor of music, at Arundel, was playing with a fourpenny-piece, by jerking it out of his hand into his mouth, when by some accident it was drawn into the windpipe. He endeavoured by various means to remove the coin, but unsuccessfully. Immediately he sought a neighbouring surgeon, who administered an emetic, but this failed, and Mr. Cole was appalled by being told 'that nothing more could be done,' and it was probable that mortification would ensue. So alarmed was he that he wrote to his friends to tell them of the unhappy accident and its anticipated results. The fourpenny-piece had become wedged in edgeways, and breathing was not interrupted, further than that it produced a kind of wheezing noise, similar to that in an asthmatical person. After trying every means to move the impediment during the night, Mr. Cole hastened to Chichester the next morning, where he was called professionally; but being unable, from pain and natural anxiety, to attend to his duties, he called at the surgery of Mr. C. S. Jones, who, by auscultation, could easily detect the coin lying at the bottom of the windpipe. The same sad tale was told him as before, and that mortification would probably set in in two days. The only chance was to have some chloroform administered, and endeavour to remove it by an external operation. This was, indeed, sad news for a young gentleman in the prime of life. But previous to his leaving Arundel, a lady had reminded Mr. Cole of a similar accident occurring to Mr. Brunel, the engineer, who had the misfortune to get a half-sovereign in his windpipe, in playing with his children. The way in which that was removed was in placing the gentleman on his head, and giving a violent blow at his back. Mr. Cole mentioned this circumstance to Jones and his assistant, but both were somewhat doubtful of such an experiment. However, Mr. Cole insisted that this singular plan of removing the imprisoned coin should be tried. A cushion was placed on the floor, his legs were raised into the air, and a violent blow was given on the back; immediately Mr. Cole shouted 'Here it is!' And true enough the fourpenny-piece had fallen from his mouth upon the floor. To describe the feelings of the patient at this moment would be impossible. The medical gentlemen were equally delighted at the result of this operation; the cushion on which Mr. Cole had placed his head was seized and thrown up into the air, and three hearty and joyful cheers were instinctively given at such a happy termination of what had threatened to be a most melancholy misfortune."

Swallowing a Bullet.—"A Highland shepherd, whilst mumbling a small bullet between his teeth, unfortunately let it escape from them, and slip into the windpipe. He coughed incessantly for two hours, after which he had slight inconvenience beyond a little occasional dry cough, till the middle of the following day, when he was attacked with shivering, headache, and deep pain in the right side of the chest. The shivering and headache ceased, but the pain continued, and he was excessively drowsy. On the evening of the third day he was seen by Dr. Macrae, who, being satisfied of the lodgment of the bullet, 'directed the man to be strapped securely to a common chair, that he might be easily suspended from the rafters of the roof with head downwards, in order that his chest might be conveniently shaken by a rapid succession of sudden smart jerks, and that the weight of the bullet might favour its escape from its seat in the lungs.' He was kept depending as long as he could endure such an uncomfortable position, and then placed in the horizontal posture for a few minutes to rest. When sufficiently recruited, he was hung up again. Upon being taken down the first time, he described the pain in his breast as moved nearer to the top of his chest, and during the third suspension he joyfully exclaimed, 'Thanig-á, thanig-á!' ('It has come, it has come!' in the Gaelic language), immediately, after a smart shaking and a few convulsive retching coughs, and spat the little bullet from his mouth."—*Household Surgery; or, Hints on Emergencies.*

Sweating Feet are cured by frequently washing the feet in soap and water, and at night sleeping in cotton socks wrung out of tepid water, and woollen socks over them.

CRAMP IN LEGS.—Attend to 150 whilst preparing 138, or, if nothing at hand for 138 use 137, and keep hot pads on knees and thighs at same time. For some days after an attack, apply 141, 143, 144, whichever most comfortable, and wrap the legs in dry flannel strips. The general state of health ought to be attended to, as cramp arises mostly from disordered stomach (see p. 6 for home treatment). 35½ useful and safe.

Palsy being paralysis, only in a different form, we treat in a similar manner :—steam-baths, bandages, packing; also bandaging the limbs in No. 214. Spinal applications good, as Nos. 121, 112, 114; also 156. Dr. Hooper says of palsy :—

"When palsy attacks any vital part, such as the brain, heart, or lungs, it soon terminates fatally. When it arises as a consequence of apoplexy, it generally proves very difficult to cure. Paralytic affections of the lower extremities, ensuing from any injury done to the spinal marrow, by blows and other accidents, usually prove incurable. Palsy, although a dangerous disease in every instance, particularly at an advanced period of life, is sometimes removed by the occurrence of a diarrhœa or fever.

"The morbid appearances to be observed on dissections in palsy are various lesions of the brain and spinal cord, more frequently the former. Where hemiplegia is a consequence of apoplexy, sanguineous effusion is generally found to have taken place in the brain on the side opposite to that which is paralysed."

APPLICATION OF HYDROPATHY TO ANIMALS, &c.—Hydropathy is quite as successfully applied to animals as to the human frame; and when the prejudices in favour of physic, bleeding, and blistering are removed, it will be extensively practised. I have used it with entire success for the last five years in various cases with my horses, cows, and pigs, when the usual modes have proved unavailing. One instance has just occurred. Mr. Bown, farmer, of Birchwood, near Alfreton, a friend of ours, sent his man over to me, saying he had a cow down of the milk-fever. I sent my man over immediately; he found the animal breathing with great difficulty. First, a blanket was dipped in hot water, wrung out, and wrapped round the animal's body, and especially round the udder; then mackintosh sheet over to keep in the heat,—(this should be done quickly), if no mackintosh sheet, bed-rugs would do, so that enough are put on to keep the heat in. This was kept on one hour without removing. Re-dipped the blanket in hot water, and so kept on fomenting for two hours, then washed over with cold water, and well rubbed dry. Then gave a wet pack with sheet wrung out of cold water wrapped round the body, then dry rugs or sacks, and the man to place a bed on the whole as the animal lay down. In pack one hour and a half, then washed her down with cold water, and rubbed her dry. The cow gave six quarts of milk, and was quite relieved. Let the cow rest, and fomented again at night, and again next morning, when she was taken out in the field for exercise, and brought back into the barn. During the whole time put dry rugs over the body when not fomenting, and in a warm place with plenty of straw. The cow was quite well the third day. Similar fomentation to pigs has often saved them when given up.

Mr. Harrison, steward to T. Evans, Esq., M.P., Allestree Hall, Derby, has very successfully applied this hydropathic treatment for pneumonia, or lung disease, by fomentations, mustard applications, &c.

TOBACCO, AND FEVER AND INFLAMMATION.—We have had some striking instances of the injurious effects of tobacco in rendering persons liable to disease. Some cases of scarlet fever have occurred in the locality of Lea and Bonsall recently. The tobacco-smokers have had the greatest difficulty in getting over the attack; their lowered vitality has told upon them, and the mucous inflammatory action which is always more or less present in smokers, as seen by the swollen and unclean state of the tongue, has determined such an amount of inflammation to the throat, that their lives have been saved only by the most constant and unremitting attention to fomenting and packing. Cases, which have been free from tobacco, have got through the fever with very little trouble, and have been quite well in three weeks. Tobacco-smokers are little aware, at the time they are using the narcotic, how they are paying for the gratification, by accumulating the seeds of disease and death in their frame. While I am writing this, a case of fever, and one of inflammation of the bowels, have sent to us for help; in both cases the chances of recovery are slight, from being smokers. We always undertake cases of tobacco-smokers with reluctance and doubt as to recovery, whether in fever, inflammation, or rheumatism. A patient arrived at my establishment yesterday; full-formed man; age, 30. He began to describe his pains; stomach affection, and general uneasy state. I said at once, "You smoke tobacco." He was surprised I could predict his state from that cause; but so it is. Tobacco gives young men the infirmities of age; and the old, the miseries of a constant craving to keep down the miserable feelings which have been created by the drug. A little reflection, by any Christian person, must show them the heinous sin in thus destroying or disabling the body from properly fulfilling the duties of life, for sensual gratification. Some ruin their health also with snuff, and some with alcohol: all such courses are an offence against God's laws. Poor, weak human nature! it is hard to give up habits. Many a young man, and older too, have been initiated into these habits by careless fathers, who have little thought how they were undermining the health and happiness of their offspring by setting them the example. Youths see their fathers smoke and take their glass of grog; they think it is manly and safe to follow their parent's example; and, by getting over the nausea and natural distaste of tobacco and spirits, they become confirmed slaves to the ruinous habit.

From the "Lancet," of October, 1857.—A NOTE ON THE EFFECTS OF TOBACCO.—"When I first occupied my present lodgings, I was struck with the almost constant appearance of a young man, obviously of fortune or independence, who walked up and down on the opposite side of the road, half-way between my window and the sea.

He was tall, robustly made, but stooped, and his whole gait and appearance were slow, slouching, and inanimate. I could not imagine what should induce a fine young man so to occupy himself, or rather to pass hour after hour sauntering up and down without occupation. At length the mystery was solved. I observed,. what I had not discovered at first, that the youth *had* an occupation; between his hand and his lips he constantly held a *pipe*. He thus, therefore, spent his time dreamily away, without energy, without object, in a state of constant half narcotism. I have known members of my own profession so to devote themselves to this narcotic, as utterly to lose the energies requisite for activity in study and practice, and consequently for success;—a room, a dress, devoted to the purpose of smoking, hours spent in the indulgence of the solitary vice; half narcotism, half anæsthesia. I would not boast, but I think I may affirm, without boasting, that I have *laboured* in the cause of medical science, during two-fifths of a century, more than any one. This journal bears testimony to these labours, and with whatever success they may have been crowned, I am firmly convinced that I never should have accomplished them had I been a smoker—had I absented myself from society, and shut myself up in a peculiar room, and in a peculiar dress, the impersonation of *self*, solitude, and oblivion. I write this for the warning of my younger professional brethren. It is plain, tobacco acts on the cerebrum, the medulla oblongata, and the heart; its effects are stupidity, defective breathing, defective action of the heart—forms of debility, and impaired energy. These phenomena are primarily physical and physiological; no doubt, the blood is poisoned, and in its turn poisons the brain, the medulla, and the heart. Sometimes, in those who smoke for the first time, these symptoms occur in a form even of danger. Such a case occurred to me many years ago, and was published in the *Edinburgh Medical and Surgical Journal*, in 1816. Of this case I propose to adduce a brief extract:—

"'Mr. J. H., aged nineteen, unaccustomed, except for a day or two before, to the effects of tobacco, smoked one and a part of a second pipe. He became affected by violent syncope, and by violent retching and vomiting. He returned home, complained of pain in the head, undressed himself, and went to bed. Soon afterwards he was taken with stupor and laborious breathing. He was found in that state by the medical attendant. The countenance was suffused with a deep livid colour; the eyes lost their brilliancy; the conjunctivæ were injected; the right pupil was exceedingly contracted; the left was much larger than usual, and had lost its circular form; both were unaffected on the approach of light. The hands were joined, and in a state of rigid contraction; the arms bound over the chest; and the whole body was affected with spasmodic contractions; the breathing was very stertorous.'

"From these several symptoms we may pretty accurately judge of what is going on in the brain, in solitary smokers, and in a minor degree in all smokers. The robust may support the effects of tobacco; but the feeble will assuredly pay the penalty of langour, inertia, and incapacity. I have known more than one instance of members of our profession, both in its higher and lower ranks, making shipwreck of their success and fortune, by addiction to solitary and sedentary smoking."

Experience has fully convinced me that Total Abstinence from ale, wine, spirits, or any stimulating liquids, is absolutely necessary in all cases if health is to be restored or preserved. I find by drinking water only I have enjoyed a freedom from headache and a buoyancy of spirits I never enjoyed whilst taking any stimulating beverage, and I also find my strength increased, and that I can take a greater variety of food without inconvenience. I strongly recommend a trial of the same plan to any and every one.

INJURIOUS EFFECTS OF SMOKING.—S. Solly, Esq., F.R.S., the eminent surgeon of St. Thomas's Hospital, Borough, has lately delivered a very important Lecture on Paralysis, before the Students of that excellent institution, in which smoking is pointed out as one of the various and insidious causes of general paralysis. After condemning the immoderate use of malt liquors or spirits, which only stimulate for a time, and afterwards produce the most enervating and pernicious effects, the lecturer proceeded:—"There is another habit also, which I cannot but regard as a curse of the present age—I mean smoking. Now, don't be frightened, my young friends; I am not going to give a sermon against smoking, that is not my business; but it is my business to point out to you all the various and insidious causes of general paralysis, and smoking is one of them. I know of no *single* vice which does so much harm as smoking. It is a snare and a delusion. It soothes the excited nervous system at the time, to render it more irritable and feeble ultimately. It is like opium in that respect, and if you want to know all the wretchedness that this drug can produce, you should read the 'Confessions of an Opium-eater.' I can always distinguish by his complexion a man who smokes much, and the appearances which the fauces present is an unerring guide to the habits of such a man. I believe that cases of general paralysis are more frequent in England than they used to be, and I suspect that smoking tobacco is one of the causes of that increase."

CASE OF BLINDNESS.—A gentleman residing in London, about forty years of age, came to our establishment to ask if, in my opinion, hydropathic treatment could do anything for the restoration of his eyesight. He had for some years suffered from inflammation in the eyes, and his sight gradually became weaker, though he had observed the strictest attention to the advice of surgeons, physicians, and oculists he had consulted. He had hesitated neither at expense nor self-denial, but all ended in disappointment; and indeed the result was a worse calamity than weakness of sight,—for the last surgeon he was under in London ordered a blister to be applied entirely over the forehead, with the intention of drawing out the inflammation, and as soon as this blister *rose well*, he became totally blind. It was the last outrage nature could submit to: the blister drew away the life of the nerves, never more to be restored. He has been ever since hopelessly blind. I could do nothing for him but invigorate his general health, which became excellent; and if this treatment had been applied earlier, I have little doubt but his sight would have been good. He had been suffering for many years from acidity, and consequent inflammatory action of the mucous membrane of the stomach, liver, and bowels; and the eyes were, as a matter of course, affected. The doctors applied their nostrums to the head, by cupping, often blistering behind the ears and at top of spine, and salivating, until the last eminent practitioner, thinking he would try the front part of the head, and carry his attack on the inflammation by blistering nearer the centre of mischief, gave him a *coup de grâce*, and received his fee! Being a certificated practitioner, and using the lawfully authorised rules of warfare against disease, he came off not only without blame, but with, no doubt, the satisfaction to himself of having tried every orthodox plan in his power. When will the College of Physicians throw aside the dogmas of the London Pharmacopœia and the Materia Medica, by which all surgeons admitted to practice must swear? These codes of cure of disease have been laid down generations back, and are known by the profession to be fallacious in many points; still their mixtures and the application of them to disease must be acknowledged, notwithstanding the absurdity of laying down laws for all present and future times, ignoring all progress in scientific knowledge of the human frame in its requirements in disease.

When will mankind shake off the superstitious regard they have for old-established usages, and think for themselves, and compare the practice and principles of not only surgeons and M.D.'s, but of other professionals who are educated with an idea that they possess a right, by virtue of their diplomas or orders, to assume an infallible authority over their fellow-creatures? This poor gentleman, from overstudying, weakened and deranged his general health. His vis vitæ drawn constantly to the brain to keep up the stimulus there for study, the nutritive process was partly stopped. The optic nerves, in common with every other part of the body, were decaying, and not being replaced until attenuation amounted to that degree, that they were incapable of conveying the sense of sight from the nervous centres in the base of the brain. All the nervous system sympathised; and when, on examination of the patient's habits of life, the doctor could easily see a cause for the ailment, why did he not look to restoring the nutritive powers, instead of prescribing a directly opposite course, draining the life further out? The patient has been a man of most strict moral habits all his life, and guilty of no excess Stimulants and good living were ordered by one, abstinence b another; then either of these courses was condemned by a third, and so on; it was all striking in the dark, until the poor gentleman's readings were put an end to by total blindness.

CASE OF OVER-WORKED BRAIN ruined by the remedies applied. A medical student of King's College, about twenty-four years of age, studying hard, paying little attention to his health, smoking cigars to soothe his nerves, and taking stimulants (but by no means more than is usually taken) to keep up his spirits. This course was followed by the natural results, congestion in the head and general uneasiness. He applied to the late celebrated Dr. Lawrence, who, according to the orthodox laws of the profession, attacked the suffering part with blisters behind the ears, cupping at the top of the spine, and salivation, by way of cleansing the blood and clearing the bowels; no doubt thinking, when he had drawn out serum and blood from the head, and made a good passage below, the whole machine would be as clear as a newly-cleansed vessel, and ready for anything the patient chose to put into it again. The unfortunate result, however, to the student (who is now in practice as a surgeon) is, that he has been losing his sight ever since the blisters drew the life out of those parts; and if he is called to any patient in haste, he is subject to a swimming in the head, that incapacitates him for immediate action. He is full of rheumatic pains, and sometimes feels difficulty in using his limbs, and a premature old age has been inflicted upon him by one of the most celebrated in his own profession. He will never regain the vitality which has been drawn out of him. He is now convinced of the soundness of the principle of looking alone to the restoration of the powers of nutrition to cure disease, and attempting the cure of a local part through the agency of the whole system. He has experienced much benefit from a partial adoption of our hydropathic plans. I was struck with a remark he made shortly after he had tried our practice and read Dr. Gully's work. "You begin," he said, "with building up; we unfortunately have to begin with pulling down before we can attempt building up." I remarked, when once this pulling down is practised, the frame never recovers the mischievous effects. I wish he dare condemn this principle in the Infirmary.

CONGESTION OF BRAIN AND PERMANENT INJURY, *from irregular living, drinking, seton top of spine, &c.*—A gentleman, age about fifty, naturally remarkably strong and robust, having had perfect health up to forty years of age, began then to feel the effects of irregular living, late hours, tobacco, wine, and spirits. Being very prosperous in his business, and a man of great energy, his naturally strong vital force kept him from feeling the extent of the mischief that was brewing. He went to the doctor when his head was a little worse than usual, or his bowels confined,—got a dose of calomel, and proceeded on the course of ruination to his body. Nature bore this as long as she could, and then set both the patient's vital force and the doctor's nostrums at defiance, and the patient was laid up with racking headache, sleeplessness, and miserable nervous feelings, amounting almost to madness. A rather strong measure was now tried; a kind of combined assault on the vitality of the system, in the shape of blisters behind the ears, salivation, and an issue of three peas at the top of the spine!! Nature never recovered this blow, nor will she as long as the patient lives; a permanent and incurable, uneasy feeling has been set up in the nerves of the head, which nothing can ever cure. The vitality of some of the nerves in the spine and head are all but destroyed, and so weakened, that at the patient's time of life (fifty) restoration is entirely hopeless. If surgeons or physicians ever cured congestion of the brain by these barbarous applications, there would be some justification for the practice, but they never did, and never will, so long as the principles of the life of the nervous system are what they themselves have discovered, and published to the world in so many instructive and truthful treatises. This patient came to my establishment most unwilling to have the peas taken out of his neck; he had been told that by drawing away inflammation they were his security against insanity. I told him I gave lamb and chicken with the peas I prescribed, and I should order them to be put into his stomach, where they would be far more likely to help to restore the nutritive powers of the body than being stuck in the back of his neck, producing stinking matter. The peas were immediately removed, and the hole cleansed and healed up with water bandages. I had this patient several months, got his bowels soon to act quite naturally, as well as the kidneys. The tongue became clean, appetite good; he could stand any amount of cold baths with pleasure, could walk ten miles at a stretch with ease, and all was right but the occasional twitching at the back of the head, where the peas had been stuck in, with an almost constant sense that something was wrong there, and on exertion, communicating to the head a sort of dull, heavy feeling, although far more slight than formerly, but not preventing sleep. It was, in fact, simple weakness of the nerves from the injury. The good state of tongue, and the general good health, show the cure would have been complete but for the barbarous invention of the peas; and I expressed my wish that the surgeon had tried the effect of the treatment upon himself before he prescribed it to his patient, the same as I try my baths and bandages, to find out by personal experience their agreeable or disagreeable effects. (See page 236.)

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SYNCOPE SENILIS, ARISING FROM GASTRIC IRRITATION. By JOHN HIGGINBOTTOM, ESQ., F.R.S., *Fellow of the Royal College of Surgeons. Read before the Nottingham Medico-Chichurgical Society.*—"I have given the name of 'syncope senilis' to this affection, particularly to direct the attention of the profession to the aged. The same complaint is common to all ages, but in a more aggravated form in infancy and old age. I am not aware that the affection has been specially noticed by any author, except under the head of indigestion, and the sufferers themselves often call it a bilious attack. I do not think that the symptom of syncope is so apparent in infancy; and I believe in middle age the attacks are slighter, and not often serious. The syncope in old age is very apparent, and is the first symptom requiring prompt attention; for if remedies are neglected, the complaint becomes sometimes much aggravated, and is followed by convulsion and death.

It is about thirty years since I first noticed particularly the syncope senilis. The subject was about seventy years of age. I thought at that time it was a precursor of an attack of apoplexy, the patient having had a slight paralysis when about twenty-three years of age, which affected him slightly through life. I was glad to find, on his recovery, that there was no increase of his paralytic symptoms. Since that time I have often observed the same syncope, unattended by any permanent ill-effects. My patients have been from sixty-eight to eighty-six years of age; the youngest sixty-eight, the oldest eighty-six. I am not aware that they have laboured under any organic disease whatever; but we all know, that at an advanced age the brain and heart, the nervous and vascular system, are frequently more inactive, and in an impaired condition. In the cases I have attended of syncope senilis, gastric irritation appears to have been the sole cause of attack. At that advanced age, mastication of the food is very imperfectly or not at all performed, for want of teeth; solid animal food has been eaten when the stomach has been in an unfit state to assimilate it, usually after having had a longer walk than the patient has been accustomed to, or had more muscular exertion than usual, so as to produce fatigue, and sometimes after exposure to cold; all which tend to weaken the power of the stomach. On this account, the food remains an indigestible mass in the stomach, and gives rise to gastric irritation, producing syncope and convulsion, which sometimes follow, often slight at first, but becoming more formidable, or even fatal, if proper remedies are not promptly used. I was called to a patient about three o'clock in the morning, his wife having been awoke by his hard breathing and noise in his throat. She found her husband was in a fit. I was directly sent for. When I arrived he had partially recovered, but very soon after, he had a second fit, which had the appearance of a slight attack of epilepsy, attended with convulsion, but had no bitten tongue, as is usual in severe attacks of epilepsy. As soon as he was sufficiently recovered from the attack, so that he could swallow, I give him half a drachm of the powder of ipecacuana with fifteen grains of bicarbonate of potass, which was followed by full vomiting; he ejected lumps of solid beef, which appeared to have been swallowed, or rather bolted, without having been masticated at all; one of the pieces, I observed, was about an inch long and three quarters of an inch in thickness. Although the food had been taken into the stomach about sixteen hours, the acute corners and edges of the beef appeared as if just cut with a sharp knife, not the least digested. No further remedy was required after the emetic, but attention to the bowels, which he reluctantly submitted to, saying he was quite well. In a month afterwards he had another fit of a similar nature. He fell down in a moment on the floor, and remained in the same state as in the former case for half an hour; the same remedies were resorted to as before, and he recovered quickly. I expect the patient will have a return of the syncope, as he is very wilful, and will not attend to any means of prevention. This patient was the youngest, being sixty-eight years of age. Previous to the first fit he had been using much muscular exertion, still being active in business.

Another case is that of an old patient, of eighty-six years, who at intervals of a few weeks had several similar attacks of syncope. After the last fit, attended with slight convulsion, I was induced to think it had been occasioned by taking solid food, which was swallowed after imperfect mastication; on that account I forbade him the use of animal food altogether. This regimen he has now strictly adhered to for some months, except a few times having taken a small quantity of tripe. He has had no return of his fainting fit, a much longer time having now elapsed than the interval after which he had several of the previous attacks. I would make an observation here, as a contrast to the former case I have related in the younger man, that at a more advanced age the patient does not recover so quickly from the attack, but requires particular attention to the digestive organs for some days, with gentle aperients, and saline medicine in a state of effervescence." (*Aperients are unnecessary and injurious. I recommend exciting the throat with a feather, or mustard and water, to produce vomiting.—J. S.*)

It is not unusual for even young men to have similar attacks from indigestion, when sudden syncope for a short period comes on, recovery taking place in a few moments. The same attack at an advanced age, I presume, would be attended with aggravated symptoms, such as those I have witnessed. The lamentable illness and death of the Duke of Wellington appears to me to have been a case of "syncope senilis," which became aggravated, and terminated fatally. In the "Life of the Duke of Wellington," by Stocqueler, it is stated that "the health of his Grace had been unusually good for some days, and on Monday, the 13th of September, it was remarked that he took a longer walk than usual through the grounds attached to the Castle." *The Lancet* of the 16th October, 1852, in the leading article, says, "During some day preceding the 14th September, 1852, the day of the Duke's death, there had been a hot midday sun, a considerable wind, chiefly from the north, and the evenings and nights were cold and chilly. The thermometer, on the night preceding the fatal event, was only six degrees above the freezing point; on the preceding day it had been up to ninety-two degrees Fahr. No precautions were taken to obviate the effect of such a change on the aged and necessarily weak system of the Duke, and the pallor of his countenance observed on the preceding Sunday showed that this influence was telling on the circulation. The stomach was ill prepared to receive a hearty dinner, and the difficulties of that organ were further increased by receiving a considerable quantity of food imperfectly masticated, in consequence of the Duke's loss of teeth." . . . . . "He took for dinner, *mock turtle*, *turbot*, *venison*, and *pudding*." It is further added in *The Lancet*, "It is probable that had the Duke's stomach been relieved by vomiting in the early part of the morning, he would now be with us; it is even probable that such an effort, if successful, at nine o'clock might have saved him; but every hour added to the exhaustion, and rendered such an act difficult."

Dr. Marshall Hall observes in a paper in *The Lancet*, of October 30th, 1852, "On the malady of the late Duke of Wellington:"—"It is obvious that if efficient vomiting could have have been induced, the offending cause of this lamentable malady would have been removed, and all might have been well; he would, humanly speaking, still be with us. We have no evidence that the Duke of Wellington had any organic disease of either the brain or the heart. It is to be regretted that there was no post-mortem examination."

It might be thought by some individuals that abstaining from animal food at the period of old age might be attended with the loss of health and strength. I had an instance in a relation of my own family, who, at seventy years of age, quite abstained from animal food, and also from wine. After the lapse of ten years, when at the age of eighty, he was requested by his relatives to resume his animal food and wine, he excused himself from taking either of them, by saying he did not want them; for he was very healthy, and in good spirits, although very thin in body. He lived till he was nearly ninety years of age. This old gentleman, I apprehend, would have been a likely subject for the syncope senilis, had he been in the habit of taking solid animal food, which he could not masticate, and would most probably have shortened his days. At an advanced age, when the physical powers of the body are declining, and second childhood approaching, and at that period when comparatively little exercise only can be taken, the body does not require the same solid food. Nature points out the use of milk and light farinaceous matter as an aliment, as being more natural, and adapted to that period of life; such food alone is sufficient to keep the body in a healthy, cheerful, and happy state. It has been erroneously stated that "wine is the milk of old age;" I believe the truth is, that milk is the wine of old age, for both the first and second childhood, the most natural and the most nutritious. Erasmas Darwin used to say, "Milk is white blood." The oldest individuals I have known have lived principally upon milk diet. Second childhood may be treated much in the way as directed by the late Dr. James Hamilton, Professor of Midwifery in the University of Edinburgh: "Plenty of milk, plenty of flannel, and plenty of sleep or rest."

REMARKS ON MEDICAL PROGRESS, by JOHN STEVENS.—"From the harmony which exists throughout the human system, we are led to the conclusion that its whole action depends on the operation of some one principle,—say the principle of heat,—and however much the idea may be derided, it is just the substance of what they tell us, 'that life is a forced state, depending on the operation of stimuli.'

"The fundamental principle that all disease originates from the same cause, either directly or indirectly, viz., a loss of animal heat, and which gives rise to the various ills humanity is subject to. It follows, therefore, that it can have but one direct or indirect mode of cure; what that is we shall presently inquire.

"First, we must ascertain what has caused the loss of the equilibrium,—in other words, how did the disease commence; was it the result of some immediate cause, or has it been gradually advancing, almost imperceptibly, with time, until we can no longer enjoy life? If from some immediate cause, it is then simply an acute disease, and may be removed equally as quickly; if not heeded, or improperly treated, it may go until it settle itself somewhere, either in inflammation of the eyes, rheumatic pains, or affections of the nervous system, or it may fall upon some vital part, and lead either to immediate death, or to a gradual decay and waste of the whole body. Loss of heat, that is, cold, or obstructed perspiration, is the primary cause in either case. The remedial process should be to equalize the circulation, relax the contracted tissues, and open the pores in the former case; and bear the same principle in mind in all others. We unhesitatingly affirm that disease is not so difficult to comprehend as most people imagine; strange forms of it, we admit, do sometimes arise, and which may not be treated successfully, but the ordinary every-day disease, that day after day is to be found almost everywhere, is as entirely within our control as are the cravings of hunger and thirst.

"'The only way to keep the body in a healthy state is to make use of such articles of food as have been proved by *observation and experience* to be adapted to accomplish the end.' After this, shall we be told that the types of disease are continually changing, and that the 'medical treatment must differ at different periods' to meet these changes? Why not apply the same reasoning to food and hunger? Food taken into the stomach nourishes every part; an injury of any one part, an obstruction of any one function, injures the whole frame. A man takes a dose of arsenic, and dies; another, corrosive sublimate, and dies. What does it prove? simply that those individuals violated a single physical law, and death was the result. Many medical men have written upon the importance of a due observance of the physical laws, and yet there is hardly a single disease in the whole catalogue of human ills in which they do not recommend a violation of these laws in order to effect a cure. How long will this absurd theory be tolerated? It is said that 'Providence has a certain way of dealing with the errors of mankind, which is to leave them to the consequences of their own mistakes.'

"The vital principle or power of life, whatever may be its constitutional essence, is undoubtedly an unit. That this vital principle is affected in some way in disease we take for granted; viz., the proximate cause of all disease consists in a loss of vital power or heat, and a deficiency in the performance of functional action. We admit of no exception; whether a diseased organ has increased or suspended its action, its proper function is not performed.

"Let us suppose a case of simple or acute fever: the digestive power is lost, of course nutrition does not go on—the secretions are suppressed—the absorption of worn-out matter or particles is suspended; but action of the sanguiferous system is much increased, and there is now danger of disorganization. In order to reduce the excitement, which must, if not arrested, end in inflammation of some vital part, and thus terminate in death, we would not use the lancet, nor administer opium nor mercury, neither would we leech, blister, cup, nor starve, but would at once open the pores. Through their million mouths the enemy should be assisted to escape; the pulse would soon lose its velocity, the crisis would be past, and the sufferer saved from a lengthened illness, or rescued from a premature grave. To subdue the vital powers, therefore, is not a rational indication; the physician should ever assist nature.

"Mr. S. Key, the first surgeon of the present times, writes, 'The higher the class of practitioner, and the greater his experience, the more does he lean on nature for his guide, and less and less confidence does he repose on the curative influence of medical agents. The sound practitioner of medicine follows nature as his polar star: if she be distorted from her path, he endeavours to conciliate her by gentle means to a return; he studies her movements, and tries to imitate them.'

"It only requires the exercise of an unprejudiced mind to convince every person of common understanding, that whatever substance possesses the property to reduce the living power in man is wholly unfit to restore that power when reduced by disease.

"In all cases of disease, we hold, the vital heat is diminished, the digestive powers are enfeebled, and morbific matter accumulates in the system. If these evils can be removed, the patient is restored to health,—otherwise not. If, therefore, we can command remedies which are best suited to remove those evils, sustain the patient, and prevent the further progress of decay, then we possess one general mode of treatment, adapted alike to all diseases, and sure to cure all, if in their nature curable.

"Lastly, to sum up, we maintain,—first, that the *principle of life is heat;* in other words, that internal vital heat is the agent on which the operations of nature depend. Secondly, that all disease is in its nature opposed to life, and therefore diminishes the vital power or heat of the body; hence a ***diminution of heat is disease:*** and, thirdly, *that the absence of heat is death.*"

The following cases show the terrible effects of purgatives, blisters, bleeding, &c., &c. We take in the *Lancet* and the *Medical Journal*, and not a number of those journals comes out but describes cases who have so clearly sunk under the effects of their anti-vital remedies that it is astounding to see such practice persisted in.

"KILLING NO MURDER."—The case which I give below was published by Dr. Bright, in a Paper on Jaundice, in the first volume of Guy's Hospital Reports, and it is a counterpart of the cases quoted by Dr. Alison. It strikingly shows the barbarity of the present authorised mode of treatment by surgeons and physicians. There is no principle of scientific knowledge shown in the treatment of such cases; but, on the contrary, the patients are seen by them sinking under their hands, day by day, as the vital powers of the body are gradually sapped by the bleeding, blisters, and purgatives, which gradually destroy the nervous vitality, until nature kindly takes the poor tortured sufferer out of their hands. The physic in this case first brings on jaundice, by constantly causing nausea, which ipecacuanha is intended to produce. Then when it is found that the liver does not act, to make it do so, the strange plan of further weakening it by drawing fourteen ounces of blood from that region is adopted; this, and the doses of physic, effectually take away all chance of restoration. And it is striking, how, day by day, as such outrages were perpetrated on nature's laws and common sense, first one organ, and then another, ceased to act, until a cruel and agonising death released the poor sufferer.

"CASE 4.—Sarah ——, aged twenty-eight, was admitted into Guy's Hospital, as a surgeon's patient, on the 6th of August. She was a married woman, and had borne two or three children; but had latterly been separated from her husband, and was said to be much addicted to drinking. As she had sores of a very suspicious character, she was ordered to take sarsaparilla three times a day, with five grains of the compound ipecacuanha powder, and of the Plummer's pill, every night, which she continued for a considerable time. On the 13th of November, I was requested to take charge of her, as she was apparently very ill; had been complaining of abdominal pain for the last week; and during the last two days had become jaundiced. I found the bowels rather confined; urine tinged with bile; pulse moderate, but quick; slight tenderness at the pit of the stomach. (Fourteen ounces of blood were ordered to be drawn by cupping from the region of the liver; the belly to be fomented: five grains of mercury with chalk to be taken immediately, and half an ounce of castor-oil four hours after, and to be repeated until the bowels should be relaxed.) 14th.—There is still some tenderness on pressure at the pit of the stomach, and accelerated pulse. (Fifteen leeches to the pit of the stomach; the mercury with chalk, and the castor-oil, to be repeated.) The yellowness increased; the stools continued of a pale clay colour; the tenderness of the upper part of the abdomen continued. It is unnecessary to give a detail of all the daily symptoms. Cupping, mercurial purges, and blue pill, with fomentations, were continued; and during ten days no very remarkable change occurred. (*The woman must have had a strong constitution, and a considerable degree of vital force, to stand all this as well as she did.*) 24th.—Slight tenderness over the whole abdomen; colour very intense; pulse 96, small, and rather sharp; respiration, 27; bowels confined; thirst; occasional sickness; and occasional pains in the abdomen, much relieved by the fomentation. (*Mark the relieving effort of our plans in such cases; why was it not continued when it gave relief?*) 28th.—She generally prefers the sitting posture in bed. Lips dry; tongue moist and red; some sluggishness in her mode of speech, and a plaintive tone (*no wonder*); pulse 88; no sickness;

six or seven loose dejections. (Twelve leeches to the pit of the stomach; a linseed poultice to the belly.) 29th.—One copious lumpy white stool. Pulse, 96; slight tenderness of pit of stomach; respiration tranquil; tongue moist, but more red at the edges. December 1st.—Her pupils are rather dilated; her mode of utterance is dull and indistinct; complains of loss of power in the left hand; the right is already disabled by disease. 2nd.—Is lying on her right side, drowsy, with her legs drawn up, moving her left hand with a kind of jactitation, often raising it to her head; she is capable of being so far roused as to put out her tongue when pressed to do so. Tongue moist, and red at the edges; the pupils are dilated. (A blister to the crown of the head; a carthartic enema.) 3rd.—Yesterday evening she was screaming loudly, with her tongue protruded between her teeth. To-day she is in a state of perfect coma, with the eyes turned up. She is incapable of being roused, and has taken no nourishment or medicine since yesterday. She died the following day."

Mark, not one single application was given with a view to nutrition;—it was all fire and sword against the frame, until it succumbed to the superior force, skill, and science brought to bear against it; and all this done in clear contradiction to the Faculty's own discoveries,—that the life of the body exists in the nervous vitality, the vis vitæ of the ganglionic system, or nerves of nutrition. They say, whatever lowers this brings on disease and death, and yet they lower this power with a promptitude and with as steady an aim as a rifleman does his gun, and with as fatal an effect. I give the following case in Queen Elizabeth's time, of the Earl of Derby, which shows that the identical mode of action was then in use as now;—the same war to the knife against the delicate wonderful structure of the human frame. The doctors, however, had not then made the discoveries of the functions and nature of the nervous system, which are now so clear; and, consequently, they are entirely unjustified at the present time in using the barber-surgeons' mode of practice.

THE FOLLOWING IS QUOTED FROM ILLUSTRATIONS OF BRITISH HISTORY, by Edmund Lodge, and shows that the practice of killing by bleeding, blistering, and physic, was exactly the same in A.D. 1594, as the previous quotation shows it is now in A.D. 1858, as practised by the "Qualified" in our own days. It does not appear that there has been any variation in the 264 years, except that medical professors, in our day, do not attribute the failures to witches, but to the want of the power of life, which their treatment so effectually destroys.

"*Indorsed*, 'TOUCHING THE DEATH OF THE EARL OF DERBY, APRIL, 1594.'

"The 5th of April, 1594, his Honour fell sick at Knowsley; on Saturday he returned to Lathome, and feeling himself worse, he sent to Chester for one Dr. Case, who, the week before, had given physic to his lady. On the Sunday his Honour had cast seven times before the doctor's coming; the colour of his vomits was like soot or rusty iron; the substance gross and fatty; the quantity about seven pints; the smell not without some offence; his Honour's water, in colour, substance, and smell, not unlike his vomits. The same night he took a glister, which wrought five times. On Monday morning he took one drachm of rhubarb, and half an ounce of manna, in a draught of chicken broth, which wrought nine times. On Tuesday, because of his continual bleeding by vomits, he was most instantly intreated to be let blood, yet by no means he could be persuaded thereunto; therefore, that day, only fomentations, oils, and comfortable plaisters were applied. On Wednesday, by the appointment of all his doctors, he took another glister, which wrought six times; and on Thursday he took another purge, which wrought with great ease nine times. The same night he took some diascordium, which somewhat stayed his stomach from vomiting, the which never ceased, more or less, in all the time of his Honour's sickness. On Friday he took a diaphorecion, or a medicine to make him sweat; but he could not sweat, although internally and externally all helps of art were used.

That night his water stayed on a sudden. On Saturday all means were use
provoke water,—as a glister, drinks, fomentations, oils, poultices, plaisters,
syringes,—but nothing prevailed; on Sunday and Monday a catheter was u
which the surgeon often sucked, but no water appeared. On Tuesday nat
declined, and his Honour most devoutly yielded his soul to God.—(*And so he*
out of the hands of the doctors.)

"In all the time of his sickness, he had fifty-two vomits and twenty-th
stools. The original cause of all his diseases was thought by the physicians
be his long and over-violent exercise, which his Honour took four days in t
Easter week, wherein he vehemently distempered the whole state of his bod
His Honour's diseases were apparently vomiting of rusty matter and bloo
yellow jaundice, swelling of the splene, melting of his fat, staying of his wate
the hiccough. His Honour took Beza stone and unicorn's horn.

[It appears the doctors were so confident in their mode of practice, that the
could only account for its not succeeding by attributing death to witchcraft: a
council was called in, and the following report drawn up.]

"*A brief of such Reasons and Conjectures which caused many to suppose his Honour to have been bewitched.*

"1. On Thursday night, being the 4th of April, 1594, his Honour cried suddenly in his sleep, started out of his bed, sought his lady, whom he thought in a dream to be dead.

"2. On Friday, in his chamber at Knowsley, about six o'clock at night, there appeared a man, tall, as he thought, who twice crossed him swiftly; and when he came to the place where he saw him, he fell sick.

"3. The same night he dreamed that he was stabbed to the heart, and wounded in many other places of his body.

"4. There was found in my Lord's chamber, by one Mr. Hallsall, an image of wax, with a hair drawn through the belly thereof, as he reported upon his oath.

"5. One Jane, a witch, demanded of one Mr. Gowleborne, his Honour's secretary, whether my Lord felt no pain in his lower parts, and whether as yet he made any water; and at that very time, as it is thought, his Honour's water stayed.

"6. All physic wrought well, and yet he had no ease; his diseases were many, and his vomits violent, and yet his pulse ever remained good and perfect.

"7. He himself in all the time of sickness cried he was bewitched.

"8. He fell into a trance twice, not able to stir head, hand, or foot, when he should have taken physic.

"9. In the end he cried out against witches and witchcraft, reposing his only hope of salvation upon the merits of his blessed Saviour.

"10. One of the witches having said well the Lord's prayer, and being forced to call upon the name of Jesus, that if she had bewitched his Honour, she might not be able to say it, again before the examiners she said all well, till she came to *Dimitte nobis debita nostra*, which by no means she could say or repeat, although it was often rehearsed to her." (*Whether or not they burnt the witch is omitted.*)

"THE CASE OF MR. STAFFORD, M.P.—(Communicated to *The Morning Star*, Nov. 28, 1857.)—The premature and sudden death of Mr. A. Stafford is suggestive of so many painful reflections, that I am prompted to analyse in detail the medical evidence adduced at the inquest, and to inquire whether it is not possible, by the adoption of a more rational system of medical treatment, to ensure more happy results, and to avert the recurrence of similar exhibitions to that which preceded the death of the lamented member for Northamptonshire. It is indeed sad to think that there should exist such glaring differences of opinion between medical men, and sadder still to know how many valuable lives are lost through the ignorance which prevails on the subject of the healing art, I must, *in limine*, disclaim any intention of uttering a single word that could reflect in the least upon the skill of Dr. Griffin, whose attention to, and anxiety for, his patient seems to have been unremitting. In fact, the verdict of the coroner's jury exonerates him, individually, from all blame. It is the system of medical treatment that I would take the liberty of examining.

"With this object in view, it is necessary to recapitulate portions of the evidence elicited at the inquest. Respecting the previous state of Mr. Stafford's health, we are told by his servant, Michael Naughten, that, with the exception of two attacks of illness, which together lasted not more than two hours and a half, it had been 'very good' during twenty-three years which he had lived with him. On Wednesday afternoon, the 4th of November, about three o'clock, Mr. Stafford complained of a pain in the lower part of the stomach, and said he feared that 'nasty old pain' was returning again. It became worse up to five o'clock, when Dr. Griffin, of Limerick, was sent for, and he arrived at Cratloe at half-past six o'clock. He bled Mr. Stafford and prescribed for him, leaving Cratloe between eight and nine o'clock. Michael Naughten looked into his master's bedroom about eleven o'clock, and saw that he was 'breathing very hard, much more so than usual. He was snoring at the time.' This was unusual, and he adds:—'On different occasions for the last sixteen years I was in the habit of going into his room, but I never could open the door without awaking him.' Michael Naughten again visited his master at two o'clock a.m., when he found him asleep 'lying on his back, and breathing harder than before.' He did not awake him, as he thought it was all right, and was delighted to see him asleep. At five o'clock in the morning, Mr. Stafford walked to Naughten's bedroom door, which was within a yard of his own, and called out, 'Get up; my arm is bleeding.' Naughten tied up the bleeding arm of his master, who, after a few minutes, relapsed into the sleep of narcotism. Michael Naughten roused the other servants, and sent immediately for Dr. Griffin, who arrived at Cratloe between seven and eight o'clock in the morning (November 5). He endeavoured to arouse his narcotised patient by forced walking, for 'about a quarter of an hour.' Naughten says, 'We could not keep him awake by walking any longer.' Dr. Griffin then ordered him to be put sitting in a chair, and told us to slap the soles of his feet. We put him on the bed for the same purpose. The thing next to hand was a razor-strop, which Dr. Griffin got himself, and slapped the soles of his feet for about twenty minutes. By hitting him two or three strokes on the sole, he would open his eyes, look around, and then fall asleep again. I think the doctor took the slapping to himself for the first twenty minutes, but then his hands got blistered, and he could not continue to hit him hard enough, for he was getting heavier asleep. I then strapped him with the razor-strop until the handle broke, when we got the carpenter to make battledores about eighteen inches long, four inches wide, and half an inch thick. These were made of deal. We broke about a dozen of them. We were slapping him with these almost all the time on the soles of his feet. We tried the palms of his hands and the calves of his legs, but that had not the effect of keeping him awake, and we had to go to the soles of his feet again. These got quite sore, and the skin came off. He would shake his leg sometimes, and draw it back from the person that would be hitting him, and then fall asleep once more. We were obliged to hit him hard enough to make him feel it all over. He would sit up in the chair, in spite of two men that would be holding him, and he would be scarcely up until he would fall asleep again. We continued beating him from about eight o'clock in the morning until between eight and nine o'clock at night. Five men took part in the beating, relieving each other. The doctor was present during the whole time. It was by Dr. Griffin's directions the beating process went on. When we gave up the beating, he seemed more lively. He used to stand up sometimes, and walked about once, and then fell into bed again. The dozen boards that were broken were fractured by the force of the blows that we gave him. When we ceased beating, he was put into bed by Dr. Griffin's directions, and in his presence. The doctor asked me, when he came in the morning, whether I had given my master the powder and the bottle he directed? I told him that I had not, and he said, 'I am very glad that you did not.'

"Dr. Griffin sent for Dr. Wilkinson, of Limerick, who arrived at Cratloe about one o'clock, and left about three or four o'clock. Dr. Wilkinson, after consulting with Dr. Griffin in the next room, sat down and looked at Mr. Stafford, and said, 'Beat him hard.' Dr. Wilkinson told Naughten that his master had got 'an over-dose of laudanum.' Dr. Griffin remained at Cratloe all Thursday, and left next morning, November 6th, about nine o'clock. Michael Naughten sat up with his master all Thursday night, and visited him about twenty times. Mr. Stafford slept and started alternately during the night, breathed very hard and snored; 'he was always nodding asleep and snoring up to the time of his death.' Mr. Stafford left Cratloe on Tuesday, the 10th of November, and slept that night at Limerick, and arrived in Dublin on the following day, Wednesday, at four p.m., his journey by rail having occupied four hours and a half. After 'nightfall' of this day, he was visited by Sir Henry Marsh, whose evidence we will defer until we have heard that of Colonel Herbert, M.P., the Chief Secretary for Ireland, who says:—'I was a very intimate friend for many years of the late Mr. Stafford, and visited him during his recent illness in Dublin. . . On last Thursday, Nov. 12th, about twelve o'clock, I received a letter from him, in which he stated that he had been dangerously ill, and that it was doubtful whether he would ever recover. . . . When I arrived, he was lying on a chair in his room, with his feet on another chair. His servant was dressing the soles of his feet. The first sound that I heard was a groan of pain, from his servant apparently touching his foot. I was much shocked with his appearance. He described the agonies he had suffered during the treatment, and was certainly convinced that the cause of his death was the treatment to which he had been subjected. I attended him to the last, and was present on Sunday evening (November 15th), when he died. He gave me to understand that he had suffered very acutely from the pain of the disease, but he alluded more particularly to the pain of the beating.'

"Let us now examine the evidence of Sir Henry Marsh, who says:—'Upon this day week, Wednesday last, November 11th, I first attended him. I saw him about seven o'clock on that evening. He was up, but in a state of extreme debility. At the moment I saw him, I felt certain that he had travelled too soon. He was not fit for such a journey as from Limerick. He had great difficulty in getting upstairs.' May this not be accounted for, in a great measure, by the state of Mr. Stafford's feet, which Colonel Herbert describes, and which he saw on the day following Sir Henry Marsh's visit? 'I have a strong impression,' continues Sir Henry, 'that the violent and agonising pain complained of in the original attack arose from gall-stones. I suspected it during the lifetime of Mr. Stafford, but had no proof of it until the post-mortem examination, during the whole of which I was not present, but at quite sufficient to form that opinion. The gall-stones were in the gall-bladder, and I am led to think that one had commenced to get into the duct, and caused the great pain.

Physiology of the Stomach.—Dr. Pavy gives a simple physical reason why the stomach is not destroyed by the solvent power of its own gastric juice. He says that in a state of health the blood is always alkaline, and the gastric juice acid. The introduction of food into the stomach causes an influx of blood to that organ, as well as determines a secretion of gastric juice, and he conceives that the alkalinity of the former fluid protects the stomach from the action of the latter, but in deranged health these conditions are more or less changed, and hence inflammatory action of the stomach, which condition, if greatly changed, brings on cancer of the stomach. It will be seen from this how dangerous soda and all alkali is, which weakens the blood power.

STRYCHNIA, which is now so commonly prescribed by doctors, produces terrible effects, and is never used without permanent injury. We have had many cases come to us for relief after having taken strychnia, but I believe the effects are incurable; the involuntary spasmodic action caused by the drug is distressing to witness; and, as to curing any disease, it must be plain to any ordinary observer such strong poison cannot aid the work of nutrition. The medical men know this, yet go on prescribing it, as will be seen below.

"Lavinia Ann Francis, aged 16 years, the daughter of a medical practitioner, died under very sudden and mysterious circumstances, from strychnia. The deceased was a daughter of Mr. William Lyndon Francis, one of the medical officers of the Stepney Union. On the night of the 5th inst., the deceased, who had been in good health and spirits, retired to rest with her younger sister. On the following morning, at seven o'clock, the deceased got up as usual with her sister. The latter repaired to the kitchen, and the deceased proceeded to the drawing-room, to perform their usual domestic duties. Shortly before eight o'clock the deceased ran down-stairs into the kitchen, and told her sister that she had cramp pains all over her. Her father and mother were called, and the deceased was placed upon a bed, where the symptoms she was labouring under became so alarming, that the parents sent for Mr. Olding, and other medical gentlemen, who adopted remedies for hysteria, but she expired in about two hours afterwards. Mr. Thomas Orton, surgeon, of White Horse-street, Stepney, said, that he was called to see the deceased on the morning of Monday, the 6th inst., about a quarter-past nine o'clock. He found her lying upon a bed, partly undressed. She was suffering from violent convulsions, and was quite sensible at intervals, when the paroxysms had subsided. She frequently called out, 'Keep me down,' and her whole body was vibrating with spasm. There was great congestion about the chest, neck, and face, and deceased had had three convulsions. The face was livid, and of a leaden hue. When witness touched her, it seemed to bring on the convulsions. Her jaws were fixed, and her eyes were ready to burst from her head. The pulse was jerking fiercely. The father of the deceased suggested bleeding, which was not admissible. Remedies were administered when the fits ceased, and there were symptoms of lock-jaw. Deceased afterwards had another fit, and then swooned away and became tranquil, and died in about a quarter of an hour. The medical attendant said, I have no doubt the deceased died from the effects of strychnia. The quantity found in the stomach was very small, but that was not a matter of moment, as it was over and above what had been absorbed into the system, so as to cause death. Strychnia is a medicine, and is used in every surgery. The 12th of a grain would be a large dose for a girl of that age. A quarter of a grain would have killed her, if administered in a single dose. The effects of the poison came on in a quarter of an hour.—Mr. Robinson, the assistant-surgeon to the Stepney Union, was next called, and said that strychnia was not sold as a poison, but was kept for medical purposes in old chronic cases. Witness asked Mr. Davis, who assisted in the dispensary at the workhouse, whether strychnia was kept in the surgery, and he said, 'Yes;' when he showed witness a small bottle, which had been kept in the cupboard of the room where the medicines were made up."

CASE of large, hard tumour in the scrotum cured in six weeks; after having tried every means of reduction by the surgeons, nature expelled it in a wonderful manner; the patient being kept in excellent health during the month he was confined to his bed. The particulars will be given to any desiring them. The patient, age 34, had a stroke of paralysis 18 months before; general health bad; had taken a deal of mercury, and the hydrocele came on; water formed, which had been frequently drawn away by puncture, until the tumour formed. First fortnight, treatment was given for the general health; No. 2 on rising, Nos. 51, 59, 62, and sometimes 63. The tumour was then attended to, and the following treatment, which soon caused a large opening in the scrotum. First morning, No.

92, eighty-six degrees; second morning, Nos. 35 and 125; third morning, the same. Every forenoon foment the part one hour and a half, then Nos. 115 and 124; afternoon the same and No. 151, lint out of tepid water, and new lint every time changed. Often and at same time sponge the matter carefully away, by squeezing spongefuls of tepid water over; very important to keep the matter cleansed out often; No. 165 wetted every three hours; no flesh meat. Had no trouble with bowels all the time, and no medicine whatever; the previous treatment had put the body in excellent health.

Sleeplessness.—Try which of the following answers (see bath list):—128½, then put on a thin, soft calico cap, lay on the right side, and keep hot water bag or pillow to stomach. Wear merino or woollen stockings over cotton socks, damped only on sole of foot; have hot foot-bottle bottom of bed, but not to touch the feet. Another plan: Use 12½, then put on 215½, and have a pillow filled with hops, steamed or dry, to sleep on, and 153½, against bare feet, and sleep in 163, 172. Another: Give 73, then lay a small 220 over stomach, under 169, and use 130; then a damp wash leather cap on, and 195. Another: Give 14, then dry woollen stockings or socks, no bandages if inclined to perspire. Another: Give 92 and 132 together, then 25 over stomach and spine, and put on 186 and 166, and pin a small 220 to top of 186, so as to lay on nape of neck.

Position in Sleeping.—It is better to go to sleep on the right side, for then the stomach is very much in the position of a bottle turned upside down, and the contents of it are aided in passing out by gravitation. If one goes to sleep on the left side, the operation of emptying the stomach of its contents is more like drawing water from a well. After going to sleep, let the body take its own position. If you sleep on your back, especially soon after a hearty meal, the weight of the digestive organs and that of the food resting on the great vein of the body, near the back-bone, compresses it, and arrests the flow of the blood more or less. If the arrest is partial, the sleep is disturbed, and there are unpleasant dreams. If the meal has been recent and hearty, the arrest is more decided, and the various sensations, such as falling over a precipice, or the pursuit of a wild beast, or other impending danger, and the desperate effort to get rid of it arouses us, and sends on the stagnating blood; and we wake in a fright, or trembling, or in perspiration, or feeling exhaustion, according to the degree of stagnation, and the length and strength of the efforts made to escape the danger. But when we are not able to escape the danger—when we do fall over the precipice when the tumbling building crushes us—what then? *That is death!* That is the death of those of whom it is said, when found lifeless in the morning, that "they were as well as they ever were the day before;" and often it is added, "and ate heartier than common!" This last, as a frequent case of death to those who have gone to bed to wake no more, we give merely as a private opinion. The possibility of its truth is enough to deter any rational man from a late and hearty meal. This we do know with certainty, that waking up in the night with painful diarrhœa, or cholera, or bilious cholic, ending in death in a very short time, is properly traceable to a late large meal. The truly wise will take the safe side. For persons to eat three times a day, it is amply sufficient to make the last meal of cold bread and butter, and a cup of some simple drink.—*Hall's Journal of Health.*

WEARING MUCH HAIR, especially at the back of the head, is injurious to any with much mental employment, or to delicate persons. I have frequently noticed this in the case of ministers of the Gospel; it often causes suffering without their being aware of it.

MISCHIEF OF EARLY EDUCATION. COMMON AND HOPELESS CASES OF CURE BY ANY DRUG REMEDIES, and only partial restoration by any others.—A lady, age about thirty, had been highly educated when very young, taught several languages, began to learn Latin at four years old, and, as a natural and certain consequence of such a training, the nervous fluid or vitality was drawn from its proper office of developing the bodily frame, and made her one of the very numerous class of invalids who can only get on in life with the help of warm rooms and carriages and nursing; unfit for any active exercise, or the active duties of every-day life; with her name constantly on the doctor's ledger, she was one of that numerous class who keep up the physician's status in society, and enable him to drive his brougham and give good dinners. When will parents study the natural and necessary conditions of healthy development? At present the practice of enfeebling and ruining the constitution in early life is in full force. I often argue the subject with parents, but rarely to any good result: they are so afraid of their children not being as clever as others, that they most effectually defeat their very reasonable desires by starving the body, depriving it of its due share of nervous vitality, to supply the brain for these accomplishments, which, when acquired, the body has often not vigour to use. "I give my children so very little schooling," says one mother, "they could not have less and not be very ignorant; I only permit them to be under their governess so long during the day, which is surely very little." I, in reply, point to the difference betwixt their sensitive, delicately formed children and those of the labouring population; and the difference, not only in the bodily conformation, but in the unnatural gravity and air of older people in their children, which polite society so much admire: the "quiet manners," no "vulgar boisterous ebullitions." But what does this prove? Why, that in these cases the brain has been drilled into what is not natural; it is already burdened with thought. The labourer's child is natural, light, joyous, when fed and clothed; and even when they see around them misery and privation, it does not depress them: they are not taught to look on the vicissitudes of life with concern; that will come time enough, and when nature has given them a frame to bear their trials. Not so with those in better circumstances; with them, all is artificial. Girls and boys, highly trained, have the manners, the ambition, the cares, the fears, and the hopes of adults; and, if they live to adult age, have a double share, and an early injured frame to carry them; so life is often miserable and a burden, and the seeds of sorrow and anxiety handed down from generation to generation. Besides this early brain-work, stimulating flesh-meat and drinks are used instead of a purely vegetable and farinaceous and milk diet, which would give them more muscle and less fire. I have been greatly struck with the difference between my free hospital patients and my establishment patients. The former are all of the labouring class, the latter of the educated classes. The labouring class are cured of diseases at my free hospital in one-third of the time usually that the others require; and the more difficult cases of nervous dyspepsia are comparatively rare in the labouring class, whilst they form the majority in the other.

IMPURE WATER is often the cause of unsuspected injury to the health. We experienced this at Cheltenham in 1851, when occupying a house in which the beautiful soft water from the new water-works was kept in a leaden cistern. My wife was affected with symptoms of poisoning, and after several weeks, I found the cause was owing to the water. On examining the lead cistern, which was closed up and never cleaned, the inside had a coating of swarf like that on the axle of a carriage. When we found out the cause and used water which had not been in a lead cistern, my wife soon recovered. The best soft spring water will soon cause a coating on any lead cistern, and there are, I believe, many such in use. Mr. F. Danchell, of 38, Red Lion-square, London, sells a very neat little pocket test apparatus, price 10s. 6d., and his little pamphlet, "Water; its Impurities and Purifications," gives much information on the subject.

PROVIDING FOR "CRISIS"—OR SOMETHING WORSE. —On the 19th of November I left home, with several friends; one Mr. Allen, the proprietor of Riber Hall (with whom we sojourn in summer at his mountain home, 600 feet above the level of the river), for Manchester, by the late train. We took tea, with eggs, before leaving, and arrived in Manchester at the Royal Hotel, at half-past ten o'clock. We found, in the commercial room, a number of gentlemen, all (with, I believe, only one exception) engaged in smoking cigars, and each with a glass of spirit and water. I observed to my friend, "Here you see how crisis is produced, and my time, and labour, and patience, and skill is taxed to counteract the effects of this unnatural mode of comforting the poor fatigued body, after the day's labour and anxiety." The exception named was a gentleman making a hearty supper of beef, pickles, pastry, cheese, celery, &c., with ale; and no doubt he would finish by following the example of those around him. "Anti-hygienic, with a vengeance!" I exclaimed. Not liking the atmosphere, and it being a very fine night, we strolled into the streets. I wanted to show my friend, Mr. Allen (who, although past the meridian of life, had never before been in a large town, nor more than sixteen miles by rail previously) specimens of the system of living he has so often seen me writing against in the drawing-room of his old Hall. On sallying out we soon met with business men who had evidently been similarly occupied to those we had left at the Hotel. None, however, showed the least signs of intoxication, but their haggard countenances told that their mode of life and occupations were not congenial to healthy development. My friend having never seen a billiard-room, we turned into one. There the same class of men met us, with countenances, some haggard and pale, others red enough, puffing cigars, as a matter of course; and breathing the heated atmosphere charged with tobacco smoke, and sulphur from the gas burners: we only stopped a few moments. A little lower down we came to a gin-shop. We walked in at one door, and went along through a motley line of drinkers—some sober, some not so; mechanics, squalid women in rags, gaudily-dressed prostitutes, some mere children—and out at the other door. My friend, horrified at such a sight in a civilised country, exclaimed, "Why are they not put down?"

After a further round by the Exchange—now looking solitary and quiet; its busy, anxious occupants of the day gone home to prepare, by their home comforts (some probably such as I have before alluded to), for the strife again on the morrow—we retired to rest, without anything more than each a glass of water, and an orange we had bought on our stroll; and rose in the morning with cool heads, and a good appetite for the luxurious display of turkey, pheasant, beef, ham, tea, and rolls, &c., the Royal Hotel so amply provides, in clean rooms, with the most civil and attentive waiters. After our meal we started on the business I had come about, which was to inspect some newly-invented machinery previous to purchasing. The streets were again all alive, with the busy crowd, like ants, going in all directions. Now and then we met a number of unemployed operatives, with starvation in their faces, their wages having ceased; and with many of them, the means of providing food and going to the nightly gin-shop being exhausted, they now feel the double deprivation of stimulants and bread too.

The great commercial crisis being at its height, the Exchange, which we now entered, was crowded with the most gloomy and anxious number of faces I ever saw congregated together. A merchant there said, many that morning trembled to open their letters, lest they should find in them information that their bills were dishonoured and themselves bankrupts. "Why," I said to my friend, "should men sacrifice health and peace, and shorten life, to make fortunes they seldom live to enjoy, and always at the expense of present enjoyment?" I wished that over the Exchange, and inside too, could be written, "For we brought nothing into this world, and it is certain we can carry nothing out. And having food and raiment, let us be therewith content. But they that will be rich fall into temptation and a snare, and into many foolish and hurtful lusts, which drown men in destruction and perdition. For the love of money is the root of all evil: which, while some coveted after, they have erred from the faith, and pierced themselves through with many sorrows."

We visited factories and machine shops, all full of bustle, dust, dirt, and anxious, haggard occupants; then dined, and turned homewards out of the rolling noise of coaches, carts, omnibuses, and hearses (of which there was a sprinkling), the smoke, and the gas, to the railway station; and were soon amidst the grand and wild scenery of the Derbyshire hills above Glossop, through which the rail passes, and arrived home late. A cup of weak tea, bread-and-butter, and an egg, and to bed, to rise early in the morning, and again to business. Business, however, with a cool head, quiet nerves, and moderate desires, and an assurance that all things shall work together for good to them that love God, is very different in its effects upon the frame from what we had witnessed the day previously.

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AFTER writing the preceding article, I am strongly reminded of many individuals I have been personally intimate with, but who are now no more seen on the stage of life. They might undoubtedly have been now living, and happy, useful members of society, had they had proper instructions from their professed ministers of health, their legally qualified doctors, as to proper mode of life, and the natural treatment in case of illness and infirmities, which not the most strict course of living will always prevent. But unfortunately they are not warned in time; and very generally and indeed without an exception, that I ever knew, the doctor likes and practises what is called good living as much as any of his patients. One case, as fine a specimen of humanity as could be found, after many years' excellent health, defying cold, heat, and fatigue—and as to indigestion, he scoffed at the mention of it if an acquaintance named such a matter—he was brought to a stand when the vigour of his constitution could no longer force functionary action; but as I have remarked in another place, when such a case does fail, it is like setting fire to fuel; for a strong person will carry an amount of mucous inflammation and morbid matter in the system that would long previously have prostrated a weaker frame; but the weaker frame, as is notorious, has a far better chance of recovering, because the deterioration of the living tissue has not gone to the extent to endanger life before the nervous energy has broken down; hence a more delicate frame is often seen to get over serious illness sooner than the naturally robust. In the case I now allude to, failing powers of digestion brought in the doctor, and, exactly as in the case of the late Prince Consort, strong medicine was administered on the supposition the patient was not a weakly person; but as the symptoms were urgent, active treatment must be promptly resorted to. Now in both cases functionary action had come almost to a stand for want of vital power, and in both cases the prompt measures were such as still further lowered the vital power, and both patients soon died. I have not the slightest hesitation in saying both would, in two or three weeks, at furthest, have been restored to health if means had been used which "directly or indirectly aided the work of nutrition," which Dr. Chambers, at page 32 of this work, shows is the only sensible way to treat disease, and which we practise, but which Dr. Chambers advocates, but does not, nor dares to do, so long as he is connected with the Royal College of Physicians; for Dr. Beale, in the same page, severely calls him to account for even expressing such heterodox ideas, according to Dr. Beale's purging and blistering legal system. The patients, however, settle the controversy by dying; and it is melancholy indeed to see one's neighbours and friends finished often in a week, and disappear by the doctor's "energetic treatment." Another acquaintance of mine, a fine specimen of a man, aged about fifty-five, was chatting with me in my room a fortnight ago; his body was yesterday interred, and his friend informs me this morning how his remains were honoured by the attendance of hundreds of persons at the funeral, and many carriages. He was an eminent public man, but prejudiced in favour of legal practice. We could have saved his life, I have no doubt; but instead of our comforting No. 98, 9, 46, 55, 163, no appeal was made to the eight millions of pores of the skin to withdraw morbid matter and increase nervous vitality, but physic and operations were resorted to, and he died in excruciating agony. Another case very nearly similar has recently occurred: one whom I knew well many years, but who has led a life of suffering from pretty nearly the same cause as the preceding, and died in similar agony. I see two or three of my acquaintance now undergoing the same process, and I know as certainly as I did in the previous cases that they must inevitably terminate in a similar manner, and that they must inevitably die painful deaths,* except so far as opiates can deaden their sense of pain; but in some cases, as doctors very well know, opiates are not strong enough to extinguish Nature's cries for relief, and which relief it would be easy to give if the rules of the profession were not regarded rather than the patient's sufferings (see relief to dying cases, pp. 158, 186). See cases, pp. 164, 171, 124, 35, 94, &c. &c., in this work; and I could give hundreds such. The fact of our never being called to our establishment except on our regular days of attendance proves the efficacy and safety with which our 120 to 140 patients are treated; and it is to be noticed that nearly all our cases are those given up or unsuccessfully treated by the legally-qualified physicians and surgeons.

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* See page 16.

NERVOUSNESS from over mental work, and not using proper means to counteract the wear on the brain.—A gentleman wrote to me six months since; much fear of his passing his examination for the profession of the law. He had taken a good deal of animal food, under the idea that it would strengthen him; had smoked cigars to soothe his nerves; drank *moderately* of bitter ale and porter to give him vigour; he, however, felt that without some remedy he should soon be unable to study at all. In this state wrote to me, saying he could not possibly leave home. After reading my book he at once altered his mode of life: stopped cigars, drank water, took little animal food, no suppers, and soon felt benefit; he came to my establishment for six weeks before going to examination, during which time he laid aside his books; went to London, passed his examination without difficulty or nervousness. Four in the waiting-room ran away without facing the examiners, and some others were plucked, who, had they had some of our invigorating treatment and a wet body bandage at the time of examination, would probably have passed, and the whole course of their life changed. Since this occurred I have had frequent testimonials from students, and also from scores of over-worked men of business, to the benefit they have received from studying Nature's laws and living accordingly.

TIC DOLOREUX.—I have had a case of a very severe kind under treatment at my own house. The gentleman is in her Majesty's service, and returned from Bermuda six months before. He was invalided by the Medical Board for neuralgia, and came to England and passed the Medical Board at Chatham, who confirmed their decision. He then came to Matlock, all the time liable to paroxysms of pain, which had haunted him for the last twelve years; but the last year or two had become so frequent and severe as almost to deprive him of reason. He could seldom get an hour's sleep night or day, and never for the last five years without taking large doses of anodynes or stimulants. Had the greatest difficulty to take any solid food, and sometimes for days dared take nothing but liquids, from fear of the violent paroxysms of pain which the act of taking food brought on. He had heard of my practice, and called upon me; after some conversation on his case, I invited him to our house, thinking there might be a possibility of some relief, but without much hope. I put him on my dietary, and then commenced active treatment. Seven in the morning had a sitting bath ten minutes, then the shallow and small douche; then, before coming out of the bath, the large douche on the spine and shoulders, wearing body bandages night and day. About half-past nine walked to a spring about a mile off, where he took off his shoes and stockings and paddled in the stream to the ankles five minutes, and afterwards poured water on the head, and then returned and had a wet pack, varied by vapour bath or spirit lamp. The latter repeated several days together gave most relief. Four p.m. sitting bath and spinal rubbing fifteen minutes, varied by vapour bath or spirit lamp; being middle of summer, active treatment could be given. Six p.m. a head bath twenty minutes, sponging the forehead at the same time. Drank five tumblers of water per day by sips. Wore a towel dipped and wrung out of cold water during the night, and as much during the day as convenient. In ten days he slept well without once being disturbed with pain in the night, and in five weeks was entirely free from it altogether. Cold weather is by no means unsuitable, but the treatment has to be modified. My former patient is now in excellent health, perfectly free from the complaint, and will remain so, if he abstains from stimulants and tobacco.

CLIMATE.—A few lines on this subject may be of service to the few who can change their residence from the cold northern counties for the more genial south. Numbers of delicate persons die simply because their constitutions cannot stand the change from a temperature, in September, of 80 or sometimes 100 degrees in the sun, in the day, to 40 in the night; and in winter, from 50 degrees in the day, to freezing point, 32, in the night, and sometimes down to 15 or 20. Much may be done to preserve health and save life, by strict abstinence from stimulants, attending to clothing, as laid down in this work, and to simple diet. Stimulants, instead of enabling persons better to endure cold and damp, have directly the contrary effect; they lower the power of the body to resist cold, by causing internal congestion, and withdrawing the blood from the surface of the body, where it is necessary to cause a feeling of warmth, and concentrating it where it causes obstruction to the circulation. I have said so much in other places in this work on the necessity of guarding the trunk from the cold and damp of our English climate in winter, that it is unnecessary to repeat it, although I see persons continually bringing upon themselves the most serious diseases simply from this cause. Delicate persons, or any at all liable to bronchial affections, if they cannot go to a warmer climate in winter and spring, may avoid the hazard of going out of warm rooms into the cold, by the use of Maw's respirator, and avoiding going out in stormy weather. Houses built on the plan of our establishment, with outer glazed saloon, gives the inmates space for exercise and good air in any weather, without the hot and close temperature of sitting-rooms generally little ventilated.

The difference of the height of the thermometer betwixt one place and another is not always a correct criterion of the climate: the shelter from the north and east winds is of more consequence to the invalid. The thermometer in the midland counties, in February, 1855, descended 15 to 20 degrees lower than at Torquay and Hastings; and at Penzance the difference was a few degrees more in favour of the invalid. When the weather in Lancashire or Yorkshire, and in the eastern counties, and the more northerly, has been too inclement for delicate persons to go out of doors, invalids could go out daily in these southern localities, and even dispense with fire in the middle of the day. Several friends of ours, who have just now (10th October) removed from Yorkshire to Hastings, inform us it is like returning to summer; the thermometer at the same time varying from 35 degrees in the night, to 45 or 50 in the day, in Yorkshire: and at Hastings the weather quite too mild for the clothing they went in. Whatever may be said by interested doctors as to the beneficial effects of cold, bracing air for invalids, experience will always convince such invalids of the truth of the contrary doctrine. Why are the registrar's reports of deaths so soon and heavily increased when cold weather sets in? And it is notorious the doctors have a very slack time in the summer months: but as soon as October comes in, in the northerly or eastern counties, acute diseases soon find them plenty of employment. By Christmas, they often find it difficult to get through their work.

Some parts in the west of Scotland and Ireland, although so far north, have very mild climates, owing to the influence of the Western Ocean, and their being protected from the north and east winds by ranges of mountains. The Gulf Stream, from the West Indies, flows towards the south-west of England; and the effects of the warm temperature of the water is felt on all the west coast. Many a life would be saved, if persons could, for a winter or two, emigrate to these genial southern climates, to have their constitutions strengthened to stand colder climates of the north.

The climate of Egypt is highly spoken of for the mildness of the winter season, and is now within about fourteen days by steamer. One of my patients, who resides mostly at Cairo, informs us that the temperature and climate of November are equal to our July, and very dry. The discomforts of foreign parts are, however, to be taken into account; and from all the information we have been able to gather on this subject, I believe a sufficiently mild climate is to be found in England, and with English comforts. Hastings, and all the coast in that locality, afford good winter shelter for the invalid; and surely where it is a question of life or death, all other considerations should give way, if the means are not wanting; but this is often the difficulty. I have corresponded with an invalid, at Hastings, from November to July. The great advantage of Hastings is not so much in a high degree of temperature during winter and spring as the absence of severe weather; the thermometer never descends to within 10 to 20 degrees so low as in the midland and northern parts of England; and even at the Chiswick observatory, the thermometer, in cold weather, goes 10 to 15 degrees lower than at Hastings. My correspondent frequently breakfasted with the window open, or sat on the sea-beach for hours; when, in these more northern parts, we were glad of a good fire. The climate of Hastings and other warm parts of England will bear favourable comparison with any abroad; and as to comforts for an invalid, those to be had in this country are greatly superior, and besides, being within range of friends. Many an invalid is ordered abroad to find discomfort and an early grave; the changes of temperature are greater in Italy and other parts than in England. Invalids should avoid the eastern coast; and as to the north-eastern, few comparatively escape chest complaints entirely. I repeat that whatever may be as to cold, bracing air being good for consumptive or delicate patients, experience will prove that a mild climate, where the patient can breathe with so much more ease, and the advantage of being able to take exercise in the open air, is very much more in favour of health than a cold atmosphere or close rooms with fires. Our large glazed saloons, heated by steam, give us great advantages for winter treatment; we recommend patients to have a course, and learn how to manage their health; but for an entire winter residence in chest diseases, no artificial protection can equal the warm southern localities of England.

CLIMATES. — THE FOLLOWING SKETCH OF CLIMATES, AND THEIR RESPECTIVE ADAPTATION TO THE PRESERVATION OR RESTORATION OF HEALTH, IS TAKEN FROM THE EXCELLENT WORK OF SIR JAMES CLARKE; TO WHICH WE REFER THE READER FOR FURTHER INFORMATION:—

"English Climates.—The great desideratum in this country is to find a mild climate and sheltered residence for our pulmonary and other delicate invalids during the winter and spring. Our warmest winter residences in England are mostly found on the southern and south-western shores; indeed, it is their vicinity to the sea which in a great degree renders them warmer than the inland parts in their respective vicinities. The mild region of England admits of a natural division into four districts or groups, each having some peculiar features in its climate which characterise it and distinguish it from the others, both as regards its physical and medical qualities. These are—

"1. The south coast, comprehending the tract of coast between Hastings and Portland Island, including the Isle of Wight.

"The superiority of the climate of this district exists chiefly during the months of December, January, and February. In March, the temperature of this coast, and that of the interior, is nearly the same. In April and May, the temperature of the interior rises above that of the coast, and continues higher, though in a less ratio, through the summer months. In October, the mean temperatures are again equal; and in November, that of the coast begins to exceed the interior. The only places on the south coast which we consider deserving of particular notice are Undercliff, in the Isle of Wight, and Hastings and Brighton, on the coast of Sussex.

"*Undercliff* is decidedly the most sheltered and warmest of these places, and it has, moreover, this convenience of most of our other winter residences, that it also affords a good summer climate.

"*Hastings* follows Undercliff in point of shelter and warmth during the winter and spring months. Its situation at the base of a range of steep hills, which protect it in a considerable degree from the north and north-east winds, renders it a milder and more sheltered residence during this season than the other parts of the coast of Sussex.

"*Brighton* differs materially in the character of its climate from both these places. It is more exposed to northerly winds, but the atmosphere is drier and more bracing. While inferior to Undercliff and Hastings as a residence in diseases of the respiratory organs, accompanied with much irritation, it offers advantages over both to invalids of a relaxed and nervous habit, who are not very excitable. Autumn is the season during which the climate of this place possesses the greatest advantages; and even to the end of December, it is one of the mildest climates in our island, and most favourable for a large class of invalids; more especially for cases in which a relaxed state of the system is a leading feature.

"Invalids who select the coast of Sussex as their winter residence might find it advantageous to pass the autumn at Brighton, and the winter at Hastings.

"2. SOUTH-WEST COAST.—The winter climate of the south coast of Devon has long been noted for its mildness. The temperature of its more sheltered spots during the months of November, December, and January (when the difference is greatest), is, in the average, about five degrees higher than that of London during the same period; whereas, on the south coast, the difference scarcely exceeds two degrees. This superiority of temperature over London at both places occurs chiefly during the night; though the days are proportionally warmer, and the temperature more steady on the south-west than on the south coast.

"Various places on the coast of Devonshire are held in repute on account of the beneficial effects of their climate, more especially in pulmonary diseases. The principal of these are *Torquay*, *Dawlish*, *Sidmouth*, and *Exmouth*. Salcombe, the Montpelier of Huxham, is unquestionably one of the warmest spots in our island during the winter. At Torquay, the invalid has the advantage of a considerable tract of sheltered country, some part or other of which will afford a protracted ride or walk, in whatever direction the wind blows. Torquay is superior in this respect to every place in our island. Its position also on the southern declivity of a range of pretty steep hills, composed chiefly of calcareous rocks, renders it comparatively dry. Hence, while Torquay possesses all the advantages of the climate of this coast, its chief disadvantage (humidity) is felt in a less degree than elsewhere.

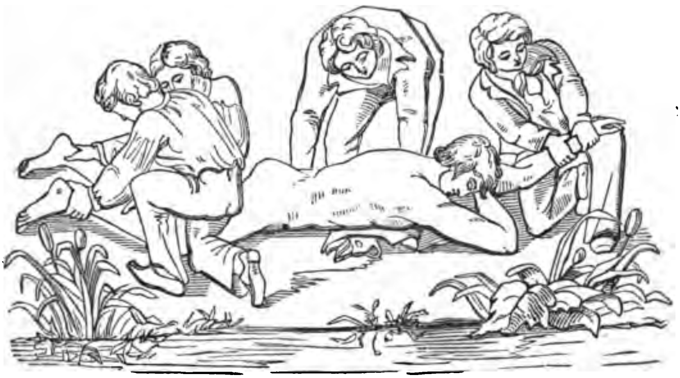
"3. LAND'S END.—The only place in this district deserving particular notice is *Penzance*, which has long been frequented by invalids on account of the mildness of its winters. Penzance has a very peculiar climate, which depends on its almost peninsular situation at the south-western extremity of the island. A remarkable equality in the distribution of the temperature throughout the year, and throughout the day and night, is a striking character of this place. In this respect, indeed, the climate of Penzance is superior to that of the south of Europe; and the only climate which we have examined that excels it is that of Madeira. This peculiarity of the climate of Penzance will be shown at once by comparing it with that of London, where the difference between the warmest and coldest months is twenty-six degrees, while at Penzance it is only eighteen degrees.

"In other respects the climate of the Land's End does not stand so high in a medical point of view. It is very humid; the quantity of rain which falls annually at Penzance being nearly double that which falls in London, and the number of rainy days much greater. This district is also proverbial for the frequency and violence of its gales; and Penzance, owing to its total want of shelter from the northerly and easterly winds, is colder during the spring than either Torquay or Undercliff. Hence it is, that, although Penzance possesses a decided superiority over all the other situations in our island, in the mildness and equability of its winter climate, its humidity, exposed situation, and liability to winds, render it inferior to several other places as a residence for invalids.

"*Flushing*, a small village in the vicinity of Falmouth, is the only other place in this district deserving notice. The position of Flushing differs from that of Penzance only in being somewhat protected from the north and east winds by a low range of hills which rises immediately behind it.

"Before quitting the south-west coast and Land's End, it is proper to remark, that, though varying somewhat in degree at different places, the predominant character of the climate is that of softness and humidity; on the system generally, it has a soothing but relaxing influence.

"From this character of the climate of the whole south-western coast of our island, it will be at once understood that it is most suitable for the irritable and inflammatory habit, and least so for the relaxed nervous constitution; that in the dry, irritated conditions of the mucous membranes, with a parched state of the skin, it will prove beneficial; while in the morbid states of the same membranes, accompanied with copious secretion, or when there exists a disposition to profuse discharges of any kind, it will prove injurious. Even many of those cases which are benefited by a temporary sojourn would be injured by a permanent residence in this district. The climate, indeed, possesses qualities of so marked a kind, that when it ceases to do good, it generally begins to do harm: hence it will seldom be prudent, much less advantageous, for the invalid who has passed the winter and spring on this coast, to prolong his residence through the summer: he will in general do well to betake himself to a drier and more bracing air, especially if he intends to return the succeeding winter.



THE READY METHOD IN SUSPENDED RESPIRATION IN DROWNING, &c.—BY DR. MARSHALL HALL.

1. Treat the patiently *instantly, on the spot, in the open air, exposing* the face and chest to the *breeze* (except in severe weather.)

I. To Clear the Throat—

2. Place the patient gently on the face, with one *wrist* under the forehead; [*all fluids and the tongue then fall forwards, leaving the entrance to the windpipe* FREE.]

If there be breathing—wait and *watch;* if not, or if it *fail,*—

II.—To Excite Respiration—

3. Turn the patient well and *instantly* on his side, and—

4. Excite the nostrils, the throat, &c., and dash cold water on the face, previously rubbed warm.

If there be no success, *lose not a moment,* but *instantly,*—

III.—To Imitate Respiration—

5. Replace the patent on his face, *raising* and supporting the chest *well* on a folded coat or other article of dress;

6. Turn the body very *gently on the side and a little beyond,* and then *briskly* on the face, alternately; repeating these measures deliberately, efficiently, perseveringly, *fifteen* times in the minute, occasionally *varying* the *side;*
[*when the patient reposes on the chest, this cavity is compressed by the weight of the body, and expiration takes place; when he is turned on the side, this pressure is removed, and inspiration occurs.*]

7. When the *prone* position is resumed, *make* equable but efficient *pressure,* with brisk movement, *along* the back of the *chest; removing* it immediately before rotation on the side;

[*the first measure augments the expiration, the second commences inspiration.*]

⁂ The result is—Respiration;—and, if not too late—Life!

IV.—To induce Circulation and Warmth—

8. Meantime rub the limbs *upwards,* with *firm grasping pressure* and with *energy,* using handkerchiefs, &c.
[*by this measure the blood is propelled along the veins towards the heart.*]

9. Let the limbs be thus warmed and dried, and then clothed, each bystander supplying a coat, a waistcoat, &c.

10. *Avoid the continuous warm-bath, and the position on or inclined to the back*

DR. MILLER ON THE ORDINARY FUNCTIONS OF THE HUMAN BODY IN HEALTH.[*]—"Every function of the living man—whether thinking by help of his brain, for example, or working by means of his muscles, or secreting through the agency of his glands, produces a corresponding disintegration of the appropriate structure; a certain amount of nervous, muscular, or secreting tissue crumbles down, and, for the time being, is rendered useless to the living economy; and, besides, its presence any longer—at least in that condition—would prove hurtful. A twofold action is required: first, to supply renewal for the waste; and second, to have the wasted material suitably removed. The latter object is accomplished by the blood, which, by the help of veins and absorbents, receives the used-up stuff into its backward or venous current, for the purpose of consuming part by the action of oxygen in the lungs, and disposing of what remains by means of the organs of excretion—the liver, bowels, skin, and kidneys. The renewing supply of the waste, from tear and wear, on the other hand, is performed by the arterial blood, in its onward current throughout the frame. Filtering through very minute and numerous vessels, called capillaries, it allows that portion of it which is needful to compensate for the ever-recurring loss to escape, and come in contact with and be applied to the parts which need it. The waste is constant—greater according to the amount of exertion made, but always more or less; and the supply must not only be constant too, and proportional in amount, but also of a *certain quality*. Send venous (*exhausted*) blood to muscle, and you mar both its structure and its working. Do the like by the brain, and the result is similar; you disorder its function invariably, and may easily enough silence it for ever. To nourish, blood must be arterial (*having received oxygen through the lungs*). Having nourished, it becomes venous (*exhausted*)—not only useless but noxious to the organs that need nourishment, and fit only to be sent back through the liver and lungs, there to undergo such changes of giving and taking as shall once more qualify it for its work of supply. In this backward course, as already said, it receives and is mingled with the used-up material, whose loss its next wave has to compensate. And whatever tends to send on this doubly-defiled current over the whole body, with an imperfect performance of the purifying process—technically called *depuration*—must inevitably cause most serious interference with health and longevity.

"But the blood is not a mere circling fluid, 'self-contained.' In every circuit it makes, it loses largely, both in quality and quantity; and *its* loss must be made up. This is done through the stomach. Food is taken in there, masticated, softened, and mixed up, so as to be in a state of suspension and solution. The gastric juice—or peculiar secretion of the stomach—mingles with it; and the *digestion* is carried on, as if in a stew-pan. Having become a pulpy fluid, called *chyme*, the food moves slowly into the alimentary canal; there it receives further additions—bile from the liver, and juice from the pancreas or sweetbread; the nutritious portion, called *chyle*, is taken up by the absorbents, whose various tubes concentrate into one common duct; and this empties its contents into the venous returning blood, just before it begins its purifying circuit through the lungs. So the feeder is fed. But some things—alcohol happens to be one, and the poison of asps another—are impatient of so roundabout a journey; they must be to the blood at once. They will not wait to be digested; but, taken up as they are, by the veins of the stomach, are carried—little if at all changed—into the general venous circulation, and do their work there, whatever it may be, with almost instantaneous rapidity. What takes place ordinarily in the lungs requires a little special consideration. The blood having suffered exhaustion and loss in its work of nourishing all the various parts of the body, having received a supply it greatly needed from the stomach and bowels, in the form of chyle—as a help; and having got also, what in some respects it might have seemed to have been better without, the used-up material refuse of life and working—as a burthen,—it passes by the right side of the heart through the lungs; and, in the cell-like ramifications of these, it is brought in all its motley mass into contact with the air, which for that purpose has been taken in by the windpipe. This air parts with its oxygen; a large proportion of which unites with carbon and hydrogen in the blood, carbonic acid and watery vapour being extricated in consequence. This important change, chemically called *oxidation*, is really a *burning*. Though not accompanied by light or flame, it is, like ordinary combustion, productive of heat; and, in consequence, it will be readily understood that the process of respiration, when duly performed, fulfils two important objects—aerating the blood, and at the same time helping to maintain the due temperature of the body.

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[*] "ALCOHOL: its Place and Power. By James Miller, F.R.S.E., F.R.C.S.E., Professor of Surgery in the University of Edinburgh, &c. &c. London: Houlston and Wright, and W. Tweedie, and of all Booksellers Cloth, 1s.

"BUT WHAT IS IT THAT IS THUS OXIDISED, OR BURNT BY THE BREATHED AIR? TWO THINGS. The used-up material of the structures, returned in the venous circulation, is either burnt off, or so modified as to be converted into the most suitable forms for final expulsion from the blood. The greater part is thrown off in the form of carbonic acid and watery vapour, while the rest, imperfectly oxidated, moves on into the general circulation, to be dealt with exhaustively in the lungs on its next transit, or to be disposed of by the liver, bowels, skin, and kidneys. This treatment of the 'waste' is essential, and must be done. But the doing of it is not enough, of itself, to maintain the general temperature. And so a portion of food, digested in the stomach, and received by the blood as chyle, is specially devoted to the process of burning too; that portion consisting of such articles of diet as contain no nitrogen—oil and sugar being special examples. In this wondrous living factory of ours, the waste material is not only burned off—as farmers do 'wrack' on the surface of their fields,—there is besides a special heating apparatus constantly at work; and so, by the twofold process, the blood is purified of its hurtful matter, while the whole frame is maintained in its due heat. Let either part of this process flag, and evil must ensue. Burn off all the blood's impurity, yet have an insufficient supply of extra fuel from the stomach—the body must grow cold.* Send an inordinate amount of peculiarly combustible† material from the stomach, so that *it* shall do almost all the burning—then the blood's impurity cannot be sufficiently consumed; venous blood will come to circulate more or less, instead of arterial; and the most serious consequences cannot fail to happen. The kidneys, and skin, and liver will make great exertions, no doubt—as excretory organs—to throw out the evil thus forced through the system, but they will not wholly succeed; and they themselves will suffer injury in the strain.

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* "It is not alleged that the whole of the heating process is done *in* the lungs. On the contrary, there is good reason to suppose (as will immediately be stated) that every act of nutrition and disintegration of tissue throughout the body—every change from fluid to solid, and from solid to fluid—is accompanied with disengagement of caloric. But obviously while much of the 'oxidation' is done *in* the lungs, almost all the oxygen enters *by* the lungs, whereby the 'oxidation,' or burning, is performed."

† "Whether it be because alcohol is 'peculiarly combustible' or not, may not be quite determined; but Prout and others have experimentally ascertained that less carbonic acid than usual is evoked during the presence of alcohol in the blood, and that that fluid is decidedly darker than in persons untainted by the 'poison.' It would almost seem as if alcohol, circulating in the blood, to a considerable extent suspended, for the time, the chemico-vital processes proper to the fluid in its normal state. Thus the oxidation of the phosphorus of waste tissue is sometimes so interrupted by alcohol, that the body of the drunkard smells of phosphorus, his breath presents a visible phosphorescence, and his urine is luminous in the dark. As will afterwards be seen, this is the only luminosity which alcohol imparts to the debauchee."

The blood will remain impure, important organs of the body will be thrown into a state of disorder, and disease of a serious kind may be established. But the whole of the oxygen taken in by the lungs is not thus accounted for. About a fourth passes into the system, with the blood, without being spent at all on oxidation of the 'waste.' This portion of the oxygen cannot well be traced in its course; but there is good reason to believe that it acts an important part in the change of the nutritious part of the arterial blood into living tissue—supplying renewal for the 'waste;' and that it is again active in the crumbling down of that tissue—constituting the 'waste;' in both actions evolving caloric. And so here is a third way of maintaining the general temperature. Under the term 'alcohol' is included, let it be distinctly understood, every kind of intoxicating drink. All the varieties of spirits, wines, and malt liquors are the same as to their intoxicating quality; that invariably depends upon the presence of alcohol. This may be more or less diluted, mixed, coloured, and flavoured; or, as in the case of malt liquors, combined with a small quantity of nutritive material;* but it is always present, and according to its amount is the intoxicating power of the beverage. A man is apt to draw a broad distinction—greatly in his own favour—between himself drinking beer and another drinking brandy, as a daily habit; but the truth is, that both are drinking the same thing only in different guise and dilution; chemically and practically, there is much the same difference as between one who drinks spirits 'neat' and another who drinks his allowance of the same thing largely 'watered.' The one drinks alcohol slightly diluted; the other drinks alcohol much diluted, and somewhat modified by flavour: but both are drinking alcohol. Not a day passes but you may hear, 'I am no drinker; for years I have never touched spirits; I take nothing but wine.' The man who so expresses himself may be in the habit of taking his pint of sherry, or quart of claret, daily, or all but daily; and, while honestly convinced that he is touching no 'spirits,' is really swallowing the same amount of alcohol as if he had taken a glass or two of raw brandy or whisky instead. He believes that spirits are injurious; he would not take *them* for the world; yet all the while he *is* taking them; and surely it is of great importance that he should be undeceived. Let it be well understood, then, at starting, that all intoxicating beverages contain alcohol, as their characteristic and essential ingredient; and, however they may vary in taste or appearance, their chemical constitution as intoxicants is practically the same. Beer, no doubt, is less hurtful than brandy—wine less dangerous than whisky; but chiefly because they contain less alcohol.

"*Alcohol is* a poison. In chemistry and physiology, *this is its proper place.*

"Many readers may receive this dogmatic assertion with a 'Pooh, pooh'—'Fanaticism and folly'—'We know better.' Let me support the assertion, therefore, by authority. 'The sedative action of alcohol on the brain,' says Christison—and we know no higher authority, either as regards poisons or the articles of the materia medica—'constitutes it *a powerful narcotic poison.* For its effects as such, if rapidly brought on by a large dose, *there is no antidote known;* the only efficacious treatment consisting of speedy evacuation of the stomach, and the employment of brisk external stimuli.'

"NOW LET US INQUIRE AS TO THE EFFECTS OF THIS FORMIDABLE AGENT.—Obviously, they will vary according to the age and condition of the recipient, and especially according to the manner and amount of the administration.

"I. Alcohol absolutely pure is seldom, if ever, taken internally. To make it at all tolerable to the stomach, it must be diluted; and the strongest brandy, whisky, or other 'spirit' contains a large proportion of water—thirty, forty, or fifty per cent. But though thus modified, a large quantity in the adult, or a small quantity in the child, may prove rapidly fatal. It is almost at once absorbed by the veins of the stomach, and mixing with the blood is carried to all parts of the body, affecting certain of these very specially,—namely, the nervous centres. These are paralysed; the heart stops, and life ceases. A man quaffs a quart of brandy almost at a draught, tumbles down, and dies on the spot. The shock of the large dose of alcohol on his nervous system, with which it is almost immediately brought into direct contact through absorption into the blood, acts like a blow on the head, or a kick on the stomach. Prussic acid is not more deadly. To obtain some idea of the rapidity with which alcohol dashes through every obstacle to reach the brain—the material organ of reason, and the special object of the poison when once it gains access to the body—consider the following experiment of Dr. Percy:—He injected about two ounces and a half of alcohol into the stomach of a dog, and the animal dropped dead almost instantaneously. As soon thereafter as he could remove the brain—an operation which occupied only a few minutes—and place it in an apparatus for distillation, he by that process extracted from it a notable quantity of the alcohol—more than from an equal weight of any other part of the body, or of the blood itself.

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* "Very small in the best of them, especially if you exclude the saccharine stuffs. For, according to Liebig, suppose a man to consume, daily, eight or ten quarts of 'the best Bavarian beer,' he will obtain from it, in the course of twelve months, no more than the same quantity of nutritive constituents contained in a five-pound loaf of bread."

"II. But the dose may not be such as to kill at once by shock. The bottle, we shall suppose, is consumed more leisurely, and by and by the man is found in a state closely resembling apoplexy—with suffused face, labouring pulse, heavy, noisy breathing, and total insensibility. What has happened? The alcohol absorbed has reached the nervous centres as before, and has all but paralysed their functions; in consequence, the heart and lungs are both acting most imperfectly; the blood is failing to receive its due proportion of oxygen in its oozy passage through the lungs, and is, besides, directly altered for the worse by the alcohol's actual presence in it. The man is choking gradually, as if with a rope round his neck, or a clot of blood in his brain. The hand of alcohol is on his throat; breathing becomes slower and slower, the heart beats more and more faintly, the body grows cold, and in no long time all is still in death. Peculiar circumstances may render such an event possible under even a comparatively small dose. Ordinary 'intoxication' may not have occurred, yet the alcohol may so injuriously determine to and act on the brain, as to cause congestive apoplexy, modified by symptoms of poisoning. And under this, life may give way, as in the following case:—A gentleman supped out, drank several tumblers of toddy, came home, went to bed. In the morning he was found insensible. A physician, hurriedly called, at once recognised the symptoms as those of narcotic poisoning, and treated the patient accordingly. Reaction began, but failed, and death occurred within a few hours. On dissection, no organic lesion or other cause of death was detected. The contents of the stomach were carefully secured, and made over to the care of a skilful chemist. Morphia was suspected, but nothing could be found—save alcohol.

"III. *INTOXICATION!* We need not describe what every one has seen, and not a few have felt. Let us, however, trace the action of the agent in this too common variety of alcohol's effects. Reaching the brain more gradually and in smaller quantities than in the previous examples, the alcohol acts as a stimulant at first. The intellectual functions are excited, as shown by gaiety, talkativeness, animated expression, play of fancy, and increased rapidity as well as variety of thought. But the paramount function of *voluntary control*—the great distinguishing characteristic of the human mind—is already affected otherwise than by increase or exaltation. While perception, memory, and imagination are specially excited, the will, almost from the first, is sensibly impaired. The mind suffers in its best part, through even slight tampering thus with the material organ wherewith it is connected.

"The heart is roused, and beats quicker; the general circulation is hastened, and the whole frame feels warmer, stronger, and better.

"As the dose is continued, its effects are not only observed in the functions of the anterior and upper parts of the brain—its intellectual portion—but extend to the deeper and posterior parts, connected with special sense and muscular power. Sight and hearing are affected, the limbs grow weak and tottering, the head swims, the tongue refuses distinct articulation. At the same time intellectual excitement becomes more and more decidedly intellectual perversion, partaking of the nature of delirium; reason is at a discount, and voluntary control placed more and more in abeyance. What is specially human is lessened, what is merely animal is intensified; the passions rise rebelliously, and defy all moral control; and the man becomes, under his own act, what the law has quaintly termed him, '*voluntarius demon.*' He is temporarily *insane*, and fitted for any act of violence to himself or others. But as the poisoning material filters on into the frame, its effects advance still farther. All semblance of stimulation, in any part or way, is over now. Intellect is all but departed; and muscular power, as well as the special senses, are gone or going too. Besides involvement of the whole brain, the upper part of the spinal cord is suffering; and, in consequence, the heart is weakened, the pulse is labouring, the respiration is oppressed; the face, that awhile ago was pale and haggard, is growing swollen and livid; and unless a halt is called now, life will speedily be in peril by coma. The best that can happen is a heavy deathlike sleep of long duration, with an awakening to fever of body and misery of mind.

"OR THE MENTAL AFFECTION MAY BE OF A DIFFERENT FORM STILL—WHAT IS TERMED '*DELIRIUM TREMENS:*'—the body weak, the nerves unstrung, the mind a prey to all manner of rapidly shifting delusions, with suspicion and fear; violence to others improbable, but injury to self not unlikely. This may be the result of an occasional bout of hard drinking, or may form a part of the 'chronic poisoning.' Ordinarily, it is connected with some aggravated excess in the habitually intemperate. As a sample, take a case—in some respects curious. A gentleman of middle age, and active business habits, had for years been intemperate; and more than one attack of *delirium tremens* had imperilled his life. When first I saw him, he was in his shirt, hopping incessantly from chair to chair, in order to avoid myriads of snakes that were crawling on the carpet. Then the vision changed upon him, and he rushed about more violently to escape from men following him with sharp knives. Suddenly he leaped upon the bed, arranged his limbs quietly, and scarcely breathed. He told us he was dead, and read out an announcement of his sudden and unexpected decease, from the page of an imaginary *Courant*, concluding with 'Friends will please to accept of this intimation.' So he lay for some minutes, affording breathing-time to his attendants; but all of a sudden he rose, went into the sitting-room, and began to write with a trembling hand hastily at the table. He said that he had stupidly forgotten to add a codicil to his will, and was glad to find that it was not too late to supply the omission. Having written a tolerably coherent statement, to the effect that he had died on such a date, and that he begged his employers to support his son as his successor in business, he quietly returned to his bedroom; but no sooner did he cast his eye on the empty bed, than he broke forth in a most violent tirade against the attendants for having stolen his body. 'Where is it? where is it? I left it lying there when I went into the parlour to write the codicil, and when my back was turned some scoundrel has taken it away. Bring it back instantly.' And so he lapsed into excitement again. But by and by stupor came on, he lay quiet once more, and despite of all the help that we could give, the 'died at Edinburgh' became a sad reality. The man does not always die, however; he may recover many a time, drinking on and on; but death in the paroxysm is not unfrequent; and, besides, this trembling delirium may pass away, only to be followed by steady insanity.

OHOL AS FOOD.—Here is the fundamental and fatal error; men
that to be food, and using it as such, which is really not food, but
od, properly so called, is that which enters the stomach, and is

thence absorbed into the general circulation, with the double object of nourishing the body and maintaining its due temperature. Such food meets with a solvent in the natural secretions of the stomach, and of other organs connected with the chyle-making apparatus—such as the salivary glands, the liver, the pancreas; and, besides, a solvent is needful also from without—holding the food in solution at the time of being taken, or swallowed along with it, or after it, in sips or draughts. Now, can alcohol be duly entered here as food, or solvent for food? Not as the latter, certainly. It refuses to act along with the gastric juice. 'It is a remarkable fact,' says Dr. Dundas Thompson, 'that alcohol, when added to the digestive fluid, produces a white precipitate, so that the fluid is no longer capable of digesting animal or vegetable matter.' 'The use of alcoholic stimulants,' say Todd and Bowman, 'retards digestion by coagulating the *pepsin* (an essential element of the gastric juice), and thereby interfering with its action. Were it not that wine and spirits are rapidly absorbed, the introduction of these into the stomach in any quantity would be a complete bar to the digestion of the food, as the pepsin would be precipitated from solution as quickly as it was formed by the stomach.' In the laboratory of the pharmaceutist, alcohol is very valuable as a solvent; it holds many things in admirable solution, and many a good tincture it makes. But in the living stomach of man—which *ought* to be no drug-shop—alcohol tends to harden and coagulate rather than to soften and dissolve. 'It is through the medium of the *water* contained in the animal body,' says Carpenter, 'that all its vital functions are carried on. No other liquid than water can act as the solvent for the various articles of food which are taken into the stomach.' Water dissolves them there; water carries them into the blood, and through the frame; and water helps to work them off again when useless. Indeed, water seems to have a very remarkable power in depuration of the system from the noxious presence of effete material—more especially when taken beyond the limits of what mere slaking of thirst requires. And on this *water-power*, no doubt, much of the success of 'the water cure' depends.

"BUT IF ALCOHOL BE NO SOLVENT OF FOOD, IS IT FOOD ITSELF? Let us see. Can it nourish or repair the waste of tissue? Not at all. It contains no sufficient chemical constitution for that end; and, besides, as we have seen, it is conveyed *unchanged* into the blood, and so circulates there until either disposed of by combustion in the lungs, or removed (more or less modified then) by the organs of excretion. Does it help to maintain due temperature? It is only too ready to do so. It is very forward to be burnt in the lungs. But is its action there desirable? The mixed ordinary food of man (as beef, bread, and vegetables) which nourishes his body—doing specially and well what alcohol cannot do at all—contains not only the peculiar materials for nutrition, but more or less of *fat* or *oil*, and *sugar* or matter convertible into sugar. Now these—especially the oil—are very suitable for oxidation by the lungs,—hence often termed 'respiratory food;' and their peculiar function seems to be the undergoing of that process, with a view to maintain temperature—in so far as such maintenance may be necessary, in addition to what is done by oxidation of the waste material returning in the venous blood. In other words, the natural arrangement as to maintaining temperature seems to be as follows:—Probably every act of nutrition and every act of disintegration of tissue—the passing of fluids into a solid, and of solids into a fluid condition—is attended with more or less production of heat; a special supply of spare oxygen being provided for that purpose. Besides, the disintegrated and waste material in the venous blood is burned off, combining directly with oxygen taken into the lungs. And any further combustion which may be necessary for completing the efficiency of the warming apparatus is effected by means of the oil and sugar, more especially the former, which ordinary food supplies. Now, it is ascertained that in ordinary food, received in even moderate quantity, there is not only enough of these combustible materials to ensure sufficient temperature, but more than enough—the superfluity being stored up, as it were, in the ordinary fatty tissu throughout the body, to meet accidental scantiness of supply, through long fasts or famine.

"Suppose, now, that alcohol is taken in any considerable quantity, along with the ordinary supply of food. It gets speedily into the blood, and into the lungs. There it has a greater appetite for oxygen than any of the other combustible materials we have mentioned; and accordingly is burned off first. The temperature may be maintained in this way, no doubt. But what happens in consequence of the temperature being thus maintained? Two things; or one of two things at the least:—The oil and sugar are not burnt off sufficiently, and these materials accumulate unduly in the body; or the waste material of the blood is not burnt off sufficiently, and this accumulates unduly in the body—poisoning the blood, and producing the serious consequences formerly spoken of; or both of these results may occur, as we believe most frequently is the case. And a third evil is also possible:—The 'spare oxygen,' as we have termed it—intended to circulate with the blood to the remotest parts of the system, and to act an important part during both the waste of tissue and its repair, so generating heat—may also be seriously encroached upon; so great and greedy is the appetite of alcohol for this substance. The obvious deduction is surely this: that when man receives a fair average supply of food, he obtains at least enough of combustible material thereby; and that when alcohol is taken in addition, it is unnecessary; the act is a work of pure supererogation—so far as warmth-giving intra-combustion is concerned. And further, the alcohol so taken is not only unnecessary, it is also hurtful, by preventing certain changes in the constituents of the blood, the occurrence of which is essential to health. Alcohol, in short, is in such circumstances not only unnecessary but injurious.

"THE POWER OF ALCOHOL TO SUSTAIN A MAN UNDER BODILY LABOUR.—Many believe that such power exists to a very great degree, and they ground their belief on personal observation. All is based, however, on a fallacy. Labour exhausts vital strength—wasting structure, lowering function. The natural remedy for such exhaustion is food and rest. Waste of tissue is repaired, and the living power of the renovated tissue re-accumulates, ready for a fresh bout of working. The exhaustion of bodily labour, remember, implies disintegration of substance, as well as diminution of power, especially in two tissues—the muscular and nervous: the muscular is the direct agent of work; the nervous is the inciter and inspector—the 'oversman;' and both are more or less exhausted by their respective duties. Now, how is such exhaustion to be either retarded or recovered from? We again say, by food and rest, properly arranged in regard to time and quantity. Let a man have sufficient food, and sufficient rest, at the proper times; and he needs no other corporeal help for the due discharge of his daily toil. He is thus enabled to overtake as much work as his frame is naturally fit to bear. And if, under such circumstances, he break down, or threaten to do so, it is a sign, not that he needs more working power, but that, being overtasked, a portion of the exacted work should be foregone. And, consequently, the man who stimulates himself, under such circumstances, is guilty of folly; while he who stimulates another, in similar circumstances, is guilty of cruelty and oppression. Now, can alcohol be brought under the category of 'food' here? As such only can it prove a true antidote to exhaustion by labour. No one asserts that it has any power to repair muscular tissue. Has it any power to nourish or repair nervous tissue? This question is open to debate; but our best authorities answer it in the negative. Well, then, if you give alcohol to a man exhausted, or being exhausted, by labour, what effect does it produce? Does it not revive him, giving to his hand a stronger grasp, and to his limbs new vigour? do not the strokes of his hammer gain a fresh force, and does not the task which he had almost abandoned become rapidly consumed? How is this? Not that he has got any nourishment or repair—any real return of strength; but because he has been goaded on to expend the remainder of his then existing strength or working capital more rapidly and determinedly than he otherwise would or could (or should) have done: the ultimate result, of course, being, that when the task is done, the man is done too. The exhaustion is infinitely greater than it otherwise would have been.

"The alcohol does not give substance and strength to either of the decaying tissues; it only *stimulates* one of them—the nervous; and so forces on this to force on the other. The nervous system is to the muscular as the rider to the horse, guiding and controlling its movements. Alcohol provides this rider with a spur and whip, whereby the poor horse, jaded though he be, may be urged on to do an amount of work which otherwise he would have broken down under. With what benefit to the horse? Exhaustion, fatigue, founder. With what benefit to the rider? There is retribution here; the result is, fatigue and founder too: for the alcohol, acting as a stimulant to the nervous system, exhausts *its* force and disintegrates *its* tissue in compelling it to urge on the muscles to a more rapid exhaustion of their force and disintegration of their tissue. The spur and whip, in their effects, exhaust the horse, but the labour of whipping and spurring exhausts the rider too; and after the effort is over, both the inciter and the incited are in much the same plight. Had it not been better to have ceased from work for a time, giving the beast of burden its food and rest, the dismounted rider likewise seeking his refreshment and repose; so that, after a while, both might have started with new mettle? If alcohol has any power whatever in giving strength, wind, endurance, *condition*, why do trainers make so little use of it in preparing their men for feats of great exertion? *All* trainers use it, we know, most sparingly; not only in small quantity, but much diluted. And the *best trainers* do not employ it at all; strictly forbidding its use, indeed, because experience has told them of its hurtful tendency, in opposing rather than favouring their object in view. Tea and coffee, then, may rank both as food and medicine. And the question naturally arises, in reference to their latter character, whether the copious and constant use of them as food is quite proper and safe? This, as we have seen, is *not essential* even under the greatest exertion. And without presuming to dogmatise, we would venture to say that when used as ordinary diet, or as luxuries in connexion with it, they ought to be taken weak, as well as in moderate quantity—in other words, temperately; while large and strong doses ought to be reserved for the necessities of the nervous system arising from exhaustion by labour or thought, depression by accident, or disorder by disease. When judiciously used, they may contribute greatly to our comfort—as much as any form of alcohol can do, and with none of its sinister results on body, mind, or morals. Call them medicines, if you will. They are 'domestic medicines,' at once safe and suitable; and, as such, the canister may range on the frugal cupboard far more appropriately than the decanter or the black-bottle, the tankard, the greybeard, or the glass. The great advantage of the water-drinker, as compared with the alcoholist, under work, is this. He has the same strength, with greater self-control. He is ready to stop, when necessity requires that he should, and runs less risk, consequently, of injury by excessive strain. He does not expend a temporary energy, at the expense of future exhaustion. He does not avail himself of a doubtful and deceitful help, at the cost of deterioration of the blood, and consequent danger to health and life. He does his work at least as copiously and as well as the other, even for a time; and in long continuance of labour, he will do it both more copiously and better. He obtains his desired end in all respects satisfactorily. There is no lassitude, headache, feverishness, foul tongue, or aching limbs the next day—even after the hardest labour. All is fresh, and supple, and free. *There is no reaction.*" *

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* "I have backed as many as 60 tons in a day, with perfect ease," says a London coal-whipper, "*since I took the pledge.* But, *before*, I should scarcely have been able to crawl home; *certain to have lost the next day's work.*" [By

As my purpose in publishing this Work is as much to prevent disease as to cure it, I think the following extract from "*Meliora*," the new Quarterly Magazine of the Alliance for the suppression of the sale of intoxicating drinks, may be useful in showing the importance of promoting the welfare of our fellow-creatures by our own example of self-denial and action in the cause of God and man, to rescue poor souls brought in bondage by what never can add to health, strength, or real pleasure.

"INTEMPERANCE is one of the greatest social evils in this empire. Our country, which ranks so high among the nations for civilisation, liberty, and commerce, is confessedly the most drunken. Its drinking customs eat out the life of the lower classes of the people. Formerly the upper and middle classes were public scandal for their drunkenness ; but now, when these are reforming, the lower classes have become the prey of this insidious and destructive vice. The facilities for drink abound, and publicans outnumber all other trades. In cities and towns spirit-shops and beer-houses are at every corner; and in the most rural districts they are numerous. In some localities they are in the proportion of 1 to every 15 houses, and throughout the country there is 1 to every 137 people. They are resorted to by our mechanics, artisans, and labourers, and, alas ! too frequently by their wives also :—

> 'Tis here they learn
> The road that leads from competence and peace
> To indigence and rapine ; till at last
> Society, grown weary of the load,
> Shakes her encumber'd lap, and casts them out.'

"Intemperance costs the country about £60,000,000 a-year. It is the chief cause of most social evils. Ministers of religion testify that it is the greatest evil to their success. City missionaries regard it as the most powerful obstacle to their labour among the sunken masses of the people. Poor-law guardians ascribe to it the majority of cases of pauperism. Our judges and prison governors declare that it occasions most criminal offences. Medical men in hospitals and in general practice find it the most prolific source of disease. Governors of lunatic asylums refer the insanity of many of their unhappy patients to its dire influence. Commercial statistics show its injurious effects on trade and shipping, and vital statistics its evil influence on life. It is the chief cause of *pauperism.* Sir Archibald Alison, the sheriff of Lanarkshire, attributes one-half of the pauperism to intemperance. The late Archibald Prentice, who was well versed in the social condition of Manchester, says that two-thirds of the pauperism there is similarly originated. An Edinburgh inspector of the poor made this statement :—'An experience of nearly twenty years in the management of the poor has forced me to the conclusion that nearly two-thirds of the destitution which exists, and is relieved from the poor's funds, is traceable either to the more remote or immediate causes of intemperance.' Of £21,000 expended, the same individual deducts £12,000 for the fruits of drunkenness. If we take this portion as a fair average, then, of the ten millions spent in support of the poor, *six* are caused by intemperance ; and of the million and a half of persons relieved, about one million are brought to poverty by drink. Were this social evil cured, or even considerably arrested, how much would taxation be lightened, and how many families would be saved from poverty. That intemperance is the chief cause of *crime* in this country has been frequently proved before Committees of the House of Commons, on the evidence of magistrates, gaol chaplains, and others interested in the subject. From some statistics now before us, procured and published by the Scottish Association for the Suppression of Drunkenness, it is abundantly attested that nearly fifty per cent. of commitments in Scotland are directly caused by intemperance, and two-thirds of the

"backing," the man meant carrying sacks of coal on his back from the barge they were unlading to the cart.]

other cases indirectly. The opinions of those who have occasion to come into closest contact with criminals have frequently expressed the same conclusion. We need not repeat what has been often quoted; but we may be permitted to give a few extracts from reports and speeches by persons whose words have authority. Matthew Davenport Hill, Esq., the Recorder of Birmingham—a gentleman whose interest in social reform is known to all, and whose ample opportunity for careful examination of criminal cases, as well as his painstaking consideration of the question, entitle him to be heard with respect—made the following statement to the grand jury of Birmingham, in January, 1855:—

"'Those of you who bear in mind the charges which have been delivered from this bench, on the causes of crime, will naturally ask how it is that the enormous consumption of intoxicating liquors which prevails through the land—a source of crime not only more fertile than any other, but than all others added together—should have been hitherto passed by, or only have been brought under notice as incidental to some other topic. The subject has occupied my thoughts for years; strange, indeed, must have been the state of my mind if it had not forced itself upon my attention, since the evils arising from the use of intoxicating drinks meet us at every turn. And, for myself, I cannot pass an hour in court without being reminded, by the transactions which are put in evidence before me, of the infinite ramifications of this fatal pest.' He then goes on to say:—'Crime, gentlemen, is the extreme link in the chain of vice forged by intemperance—the last step in the dark descent; and thousands who stop short of criminality, yet suffer all the other miseries (and manifold they are) with which the demon Alcohol afflicts his victims.' The Rev. John Clay, long the chaplain of Preston Gaol, and well known as an accomplished statist and practical philanthropist, said in Thirty-first Report, 1855:—'I would note the fact, that during two years I have heard 1,126 male prisoners attribute their offences—frauds, larcenies, robberies, burglaries, rapes, homicides—to drink! And if every prisoner's habits and history were fully inquired into, it would be placed beyond doubt that *nine-tenths* of the English crime requiring to be dealt with by the law arises from the English sin which the same law scarcely discourages.'

"Similar testimonies are being delivered every day by those who are connected with the administration of criminal law; and they are sufficiently alarming to demand the attention of our statesmen, philanthropists, and the sober and industrious people. They force the conviction upon all who desire to advance social reform that some stronger restraint than has been hitherto tried should be laid on the traffic in intoxicating liquors, for the protection of public virtue and the welfare of the people. Intemperance is a great cause of *disease*. Of course we do not mean to affirm that disease would be extirpated if the community were delivered from drunkenness. But just as the removal of filth is a prevention of cholera, so the promotion of temperance would lessen the multifarious ills which body and spirit endure from drunkenness. Bodily diseases are greatly induced by drinking. Indeed, the habitual use of intoxicating drinks is injurious to the constitution. It is an artificial mode of life, inconsistent with the natural operation of bodily functions. They exercise a deleterious influence upon the nervous system, the eye, the alimentary canal, the liver, the heart, and the kidneys, as may be learned from medical opinions of the highest authority. It is well known that the greater part of those who fall victims to fever and other epidemic diseases are such as indulge in ardent spirits, and the vices to which they inflame them. On this subject the evidence of Dr. Gordon, of the London Hospital, given to the Parliamentary Committee, may be sufficient. 'My attention,' says he, 'was called to it some time ago, at the time I was assistant physician to the hospital, and was in the habit of seeing the out-patients to the amount of some thousands, probably, in the course of the year. I kept an account for twelve months. . . . . It amounted to 65 per cent.

upon some thousands.' Coroners bear the same evidence. Mr. Wakley asserted long ago that 900 out of 1,500 deaths annually brought before him were caused by excessive drinking. Once and again, though we believe he has expressed himself otherwise since, did this able coroner state :—'I am surprised that the legislature, which is justly particular about chemists and druggists vending poison, is not equally so with the vendors of gin, which appears to cause such a dreadful waste of life.' *Insanity* is occasioned more by this vice than by any other single influence, if we except hereditary disposition. Dr. Browne, of the Crichton Asylum, Dumfries, in a paper on the subject, declares that of 57,520 cases in the present century which he has carefully examined, and which were treated in public asylums, 10,717 were caused by intemperate habits. This does not include the numbers of the insane kept at home or in private boarding-houses. 'It is enough,' says this gentleman, 'that while the virtuous sorrows, the inevitable misfortunes, and the physical diseases, and the many other evils to which man is exposed, produce in fifty years 40,000 lunatics, drunkenness, drinking, the pleasures of the table, produce 10,000.' The contrast between drunken and sober countries in relation to insanity is very striking. 'In Scotland there is 1 lunatic to 563 sane persons; in Spain, 1 to 7,181.' 'In Edinburgh every sixth lunatic owes his misfortune to intemperance; in Palermo every twenty-first lunatic is in the same predicament.' The late Dr. Blomfield, Bishop of London, from statistics of 1,271 lunatics, found that 649, or nearly one-half, were deprived of reason by intemperance. A most lamentable fact connected with this is, that the children of drunkards are weak, hysterical, wayward, and diseased. The late Rev. W. J. Conybeare, in his able article on Intemperance in the 'Edinburgh Review,' declares that of 300 idiots in Massachusets, 145 were the children of drunkards. These facts—and they might easily be multiplied a hundredfold—are sufficiently alarming, and call for some remedial measure to arrest a growing evil. We might assert, also, how much intemperance, and the manufacture of and traffic in intoxicating drinks, injure remunerative trade and lesson the demand for productive labour. The economics of this question form an argument of singular force and of practical power, were it brought out fully, as we trust it will be in the pages of this journal. It is only necessary at present, in thus hinting at the subject, to state that, from statistics of undoubted authority, it has been proved that of £100 worth of shoes, £37 go to the workman, 40 per cent. of earthenware, 48 per cent. of linen yarn, 66 per cent. of woollen cloth, besides 5 per cent. for making clothes. Whereas of £100 spent in alcoholic drinks, only £2 10s. go for labour! The manufacturer of useful articles will employ thirty-four men at £1 5s. per week, where the manufacturer of strong drink will employ but *two*. Working-men should be made to understand this fact—it is worth remembering—that the manufacturer of alcoholic drinks employs but one labourer where the manufacturer of other commodities employs *seventeen*. If the destructive vice of intemperance were prevented, the demand for productive labour in useful articles would be greatly increased, and the revenue of the state would be supplied by the greater purchase of taxed goods. But the economics of this question is too great a subject for our present limits.

"It may now be asked, what is the cure proposed for this social disease? We unhesitatingly answer, that when any vice becomes dangerous to the community, it must be dealt with surgically. It must be cut off by legal restraint and moral reprehension. Those to whom ardent spirits are a temptation ought at once and for ever to abstain from their use. These stimulants, when once their fire has kindled a passion, are not to be trifled with. The passion is like phosphorus, easily ignited and rapid in its combustion. To save such a number as annually fall into poverty, crime, disease, and an early grave; to preserve many homes which annually become a waste and a place of weepers; to save wives from widowhood, children from orphanage, and generations from hereditary diseases; to save souls from suicide, the terrible spectre of their own consciences, the accusations of heaven, and the dread retribution,—let us promote abstinence.

To keep feet from falling into a pit so bottomless; appetite from craving with a thirst insatiable; means from melting into water which cannot be gathered up again; men from becoming paupers, dependent on the pitiful dole of a poor-law officer; invalids, with bloated face, blushing nose, and bloody eyes; maniacs, with 'a brute, unconscious gaze,' with *delirium tremens* peopling the room with shapes of hideous fiends; from becoming social and moral wrecks, outcasts from society and from God—let us aid in delivering the land from drunkenness.

"But many of our readers may not be tempted with ardent spirits to become drunkards. They have not felt any harm from the use of strong drink. They never took too much. They let their 'moderation be known to all men.' They are exemplary citizens. But they see their fellow-citizens ruining themselves on every side, their families becoming dependent on the public, and the tax to feed and punish them grudged; but they do nothing more than show the tempted that they can play with fire and not be burned. Their weaker brethren, like Samuel Johnson, 'cannot take a little;' they cannot take coals into their bosom without being burned. Something more than has yet been attempted must be done on behalf of the drunken masses of the people. It would not be a great sacrifice to abstain for the sake of the drunkard. Sympathy with the degraded, philanthropy, patriotism, and Christianity demand that some earnest and active and self-denying effort be made. What father would put in the power of a drunken son the temptation that would ruin him? A family has a right to protect itself; and, for the sake of one, *ten* would willingly forego the use of intoxicating drinks as beverages. There are hearts among us, warm with a pure benevolence, who are ready to give labour and means to save a needy or perishing brother, who regularly surrender a portion of their money for philanthropic purposes. Here is a sphere for liberality and example. The community is cursed with drunkenness, and tempted by facilities for drinking. Let philanthropists combine to preserve social as they do sanitary health, and remove the temptation from the imperilled. A community has a right to protect itself; and it is a virtue to sacrifice for the prevention of sin. The weeping mother who has now to sally forth to scenes of revelry and debauch to seek her drunken son; the faithful wife that sits at home beside her cradle, and can scarcely sing a lullaby to her crying child, for the sobs she heaves, and the salt tears she sheds over the husband of her youth, who is drinking in the tavern; all the families who have any member addicted to this vice—and there are *two out of every three homes* of the humbler classes in this painful position; the tempted, who are so often dragged to spend their wages and blight their peace by indulgence in alcoholic drinks; the besotted drunkards themselves, who are given over to the insidious vice and its consequences, and who cannot resist the opportunity,—would all hail deliverance, were the traffic in intoxicating liquors totally suppressed. But the evil is not merely domestic or provincial, it is national; and a people have a right to protect themselves. The patriotic and the Christian, who care for the common weal, are bound to attempt to roll away the reproach of drunkenness from the land, and to save the tens of thousands who every year perish by this evil. More than ever is this cause growing in interest and importance. More than ever are Christian men convinced of the necessity of restraining the liquor traffic, and of suppressing it altogether, except for medicinal, artistic, and sacramental purposes. But public-houses are *licensed* by the State, and a large portion of our revenue is raised by 'the sale of what is both physically and morally injurious to the people.' That which is morally wrong can never be politically right. It is contrary to all sound morality to enact laws which will, either directly or indirectly, foster crime. That the laws at present in operation with regard to public-houses have such a tendency, there can be no doubt. 'The beer-house and the gin-shop,' says the Recorder of Birmingham, 'are the authorised temptations offered by the legislature to crime.' There must be an alteration in these statutes. The conscience of the country is being aggrieved by them, and when once the public feeling is aroused on a matter of right, its demand must, sooner or later, be met. Compromise is fatal.

“*Vegetables contain all the elements and qualities necessary for the complete nutrition of man.*—Having seen that history and science bear ample testimony to the truth that vegetables *were* the original, and *are* (now as well as in former ages) the natural food of man, the inference that they are also his best food seems unavoidable; but, as evidence of a totally different nature from that already produced can be brought to prove the latter, independently of the two former propositions, the whole three may be considered established as clearly and firmly as questions of such a nature admit. First, then, we must inquire what important purposes food is designed to answer in the human economy; secondly, whether vegetables possess the elements and qualities necessary for answering those purposes; thirdly, we must ascertain whether they are easy of digestion; and, lastly, whether they are superior to animal food or a mixed diet for sustaining all the vital processes—for producing the ‘*mens sana in corpore sano,*’ in the greatest perfection and for the longest period. [*Mr. Smith gives, in twenty-five pages, a very clear account of the constitution of vegetable and farinaceous food.*]

“The experiments of Dr. Beaumont and others prove, that when fruits, roots, and farinaceous substance have been well masticated and mixed with saliva, they are easily digested in the healthy human stomach, and answer all the purposes of complete nutrition. A short statement of facts, from Dr. Beaumont's Tables, will confirm these remarks. He informs us, that the following articles were converted into chyme, or digested, in the time mentioned:—

	H.	M.
“ Rice, boiled soft	1	0
Apples, sweet and ripe	1	30
Sago, boiled	1	45
Tapioca, Barley, stale Bread, Cabbage, with Vinegar, raw, boiled Milk and Bread, and Milk, cold	2	0
Potatoes, roasted; and Parsnips, boiled	2	0
Baked Custard	2	45
Apple Dumpling	3	0
Bread-corn, baked; and Carrots, boiled	3	15
Potatoes and Turnips, boiled; Butter and Cheese	3	30
Tripe and Pigs' Feet	1	0
Venison, broiled	1	35
Cod Fish, boiled; and Eggs, raw	2	0
Turkey, Goose, and Lamb	2	30
Eggs, soft-boiled; Beef and Mutton, roast or boiled; and Oysters, raw	3	0
Boiled Pork; stewed Oysters, Eggs, hard-boiled, or fried	3	30
Domestic Fowls and Ducks, roasted	4	0
Wild Fowls; Pork, salted and boiled; Suet	4	30
Veal, roasted; Pork, and salted Beef	5	30

“Dr. James, of Wisconsin, Dr. Whitlaw, Dr. W. A. Allcott, of Boston, U.S., and many others, have both advocated and personally tried, for many years, a strictly and exclusively vegetable diet. When Boadicea, queen of the Ancient Britons, was about to engage the Romans in a pitched battle, in the days of Roman degeneracy (A.D. 61), she encouraged her army by an eloquent speech, in which she says, ‘The great advantage we have over them is, that they cannot (like us) bear hunger, thirst, heat, or cold. They must have fine bread, wine, and warm houses. To us, every herb and root are food; every juice is our oil, and every stream of water our wine.' 'In those times,' observes Lord Kaimes, 'our fathers were robust both in mind and body; and could bear, without much pain, what would totally overwhelm us.' A considerable proportion of the labourers in various parts of England and Wales, even at the present day, eat but little animal food; and, about seventy or eighty years ago, the principal part of the labour in this country was performed by those who seldom or ever tasted flesh-meat. The hardy Scotch, also, are almost exclusively confined in their diet to the productions of the field and garden. 'So late as 1763,' says Mr. McCulloch, 'the slaughter of bullocks for the supply of the public markets was a thing wholly unknown even in Glasgow, though the city had then a population of nearly 30,000!' The Lazzaroni of Naples are a tall, stout, well-formed, robust, and active class of people; and yet subsist chiefly on coarse bread and potatoes; and their drink of luxury is a glass of iced water, slightly acidulated.

"In France, a vegetable diet prevails to a very great extent. M. Dupin informs us that two-thirds of the French people, to this day, are wholly deprived of animal food; and live on chestnuts, or maize, or potatoes. The peasantry of Norway, Sweden, Russia, Denmark, Poland, Germany, Turkey, Greece, Switzerland, Spain, Portugal, and of almost every other country in Europe, subsist principally, and most of them entirely on vegetable food. It has been observed, that 'from two-thirds to three-fourths of the whole human family, from the creation of the species to the present moment, have subsisted entirely, or nearly so, on vegetable food; and always when their alimentary supplies of this kind have been abundant and of a good quality, and their habits have been in other respects correct, they have been well nourished and well sustained in all the physiological interests of their nature.'

"Dr. Adam Smith, in his 'Wealth of Nations,' says:—'It may indeed be doubted, whether butcher's-meat is anywhere a necessary of life. Grain and other vegetables, with the help of milk, cheese, and butter, or oil (where butter is not to be had), it is known from experience can, without any butcher's-meat, afford the most plentiful, the most wholesome, the most nourishing, and the most invigorating diet.'

"Mr. W. Fairbairn, of Manchester, in the 'Report on the Sanitary Condition of the Labouring Population of Great Britain, says:—'I observed, on a late journey to Constantinople, that the boatmen or rowers of the caiques, who are, perhaps, the first rowers in the world, drink nothing but water; and they drink that profusely during the hot months of the summer. The boatmen and water-carriers of Constantinople are decidedly, in my opinion, the finest men in Europe, as regards their physical development; and they are all water-drinkers: they may take a little sherbet; but, in other respects, are what we should call, in this country, "Teetotallers." Their diet is chiefly bread; now and then, a cucumber, with cherries, figs, dates, mulberries, or other fruits which are abundant there; now and then, a little fish: occasionally, I believe, they eat the flesh of goats; but I never saw them eating any other than the diet I have described. They eat about the same amount as European workmen; but, if anything, are more moderate as respects quantity.'

"Sir Francis Head informs us, that immense loads are carried by the South American miners, though fed entirely on grain and pulse. 'It is usual for the copper-miners of Central Chili to carry loads of ore of 200lbs. weight up eighty perpendicular yards, twelve times a day. When they reach the mouth of the pit, they are in a state of apparent fearful exhaustion, covered with perspiration, their chests heaving; yet after briefly resting, they descend again. Their diet is entirely vegetable: breakfast consists of sixteen figs and two small loaves of bread; dinner, boiled beans; supper, roasted wheat grain. They scarcely ever taste meat; yet on this simple diet they perform a labour that would almost kill many men.' 'The diet of the Affghan consists of bread, curdled milk, and water. He lives in a climate which often produces in one day extreme heat and cold; he will undergo as much fatigue, and exert as much strength, as the porters of London, who are fed on flesh and ale; neither is he subject to their acute and obstinate disorders.' An officer of a frigate who had been at the Sandwich Islands has declared that our sailors stood no chance in boxing with the natives, who fight precisely in the English manner. A quartermaster, a very stout man, and a skilful boxer, indignant at seeing his companions knocked about with so little ceremony, determined to try a round or two with one of the stoutest of the natives, although strongly dissuaded from the attempt by his officers. The blood of the native islander being warmed by the opposition of a few minutes, he broke through all the guards of his antagonist, seized him by the thigh and shoulder, threw him up, and held him with extended arms over his head for a minute, in token of triumph, and then dashed him on the deck with such violence as to fracture his skull. The gentleman added, that he never saw men apparently possessed of such muscular strength. Our stoutest sailors appeared mere shrimps compared with them. Their mode of life, constantly in vigorous action in the open air, and undebilitated by the use of stimulating food or drink, may be considered as a perpetual state of training. Examples might be multiplied, from all parts of the world, of people living entirely upon vegetable food, and enjoying perfect health and bodily vigour; but perhaps none are more striking than those we have in close proximity to us. 'The chairmen, porters, and coal-heavers, the strongest men in the British dominions, are said to be, the greater part of them, from the lowest rank in Ireland, which are generally fed with the potato. No food can afford a more decisive proof of its nourishing quality, or of its being peculiarly suitable to the health of the human constitution.' This remark has been amply confirmed by the recent experiments of Professor Forbes, on the weight, height, and strength of above eight hundred individuals;—his tables clearly showing that the Irish are more developed than the Scotch at a given age, and the English less.

"Mr. Brindley, a celebrated canal engineer in this country, informs us, that in the various works in which he has been engaged—where, the workmen being paid by the piece, each exerted himself to earn as much as possible—men from the north of Lancashire and Yorkshire, who adhered to their customary diet of oat-cake and hasty pudding, with water for their drink, sustained more labour, and made greater wages, than those who lived on bread, cheese, bacon, and beer—the general diet of labourers in the South. Diseases of the liver are much more common where a flesh diet abounds. Dr. Copland informs us that 'eating largely or frequently, especially of animal, rich, and highly seasoned food—stimulating the appetite by a variety of incongruous dishes and sauces, and spices and wines, particularly in warm countries and seasons—are most influential causes of these disorders.' We have known various persons who have been delivered from painful and obstinate disorders by giving up the use of animal food entirely; and others in whom disorders of the nervous system and the chest had been very much relieved by the same procedure.

"Dr. Caleb Bannister, of Phelps (N.Y.), whose ancestors, it appears, had all died of hereditary consumption, states as follows:—'At the age of twenty, I began to be afflicted with pain in different parts of the thorax, and other premonitory symptoms of phthisis pulmonalis. Having a severe attack of ague and fever, all my consumptive symptoms became greatly aggravated; the pain was shifting, sometimes between the shoulders, sometimes in the side or breast, &c.'

After enumerating various other symptoms (such as irritable pulse, &c.), and stating that his life was despaired of, he says :—'I was induced to try a milk-diet, and succeeded in regaining my health; so that, for twenty-four years, I have been entirely free from any symptom of phthisis.'

"'It will not be disputed,' says Dr. Lambe, 'that, for consumptive symptoms, a vegetable diet, or at least a vegetable and milk diet, is the most proper. Dr. Buchan again observes :—'When there is a tendency to consumption in the young, it should be counteracted by strictly adhering to a diet of the farinacea and ripe fruits. Animal food and fermented liquors ought to be rigidly prohibited; even milk often proves too nutritious.' Scrofula, cancer, scurvy, epilepsy, dysentery, inflammation, ulcers, &c., may be included among the diseases which are greatly relieved, if not cured, by vegetable diet; as the ensuing facts attest. Dr. N. J. Knight, of Truro, records the following case :—'Mrs. A., infected with scrofula of the left breast, and in a state of ulceration, applied to me two years ago. The ulcer was then the size of a half-dollar, and discharged a considerable quantity of imperfect pus. The axillary glands were much enlarged; and, doubting the practicability of operating with the knife in such cases, I told her the danger of her disease, and ordered her to subsist upon bread and milk, and some fruit, drink water, and keep the body of as uniform temperature as possible. I ordered the sore to be kept clean, by ablutions of tepid water. In less than three months the ulcer was healed, and her general health much improved. The axillary glands are still enlarged, though less so than formerly. She still lives simply, and enjoys good health; but she tells me, if she tastes flesh meat, it produces a twinging in the breast.' A physician, in answer to Dr. North, states that he had been subject to severe attacks of epilepsy; but, having maintained a total abstinence from flesh, fish, and fowl for two years and a-half, he had been entirely free from any attack.

"Dr. Cheyne relates a remarkable cure of epilepsy, in the case of Dr. Taylor, who was for a long time dreadfully afflicted with epileptic fits. He tried the effects of medicine, and consulted all the most eminent of his brethren of the medical profession in and about London; but obtained no relief. At last he was obliged to follow the advice of Dr. Sydenham, whose works he had studied. He first discontinued the use of all fermented and distilled liquors; then, finding his fits become less frequent and less violent, he gave up all animal food, and confined himself entirely to cow's milk. In the course of a year or two he was perfectly cured, and for seventeen years enjoyed as good health as human nature is capable of. But the most remarkable cure of this kind is recorded in the *Lancet* for May 14, 1842, by Mr. S. Rowbotham, surgeon, of Stockport. The son of a Mr. Fielding, of that town, about three years old, had been ill eighteen months. He was covered from head to foot with ulcers; his eyes, nose, ears, mouth, and, in fact, his whole head and face, were involved in one complete mass of fetid running sores and ulcers; and the lower part of his body was equally bad, so that his little thighs seemed nearly separating from his body. For more than twelve months he had been quite blind, and had never been able to sit down, even on a pillow, but stood upon his foot, and leaned with his elbow upon the nurse—except at times, when he was able to kneel on a pillow: he had scarcely been able to lie in bed for the same period. Eight of the most eminent medical men had given him up as incurable; and some of them declared that no known mortal power could even *improve* his condition, much less effect a cure. 'From certain views which I held on the origin of disease,' says Mr. Rowbotham, 'I was induced to recommend a diet consisting almost entirely of ripe fruits and honey, or sugar and treacle. The child commenced this diet on the 13th of September, 1841: he had stewed fruits, mixed with sugar or honey, to all his meals, and was allowed frequently to eat grapes, cherries, plums, apples, pears, and such other fruits as could be obtained. On the 16th the sores on his back were beginning to disappear; on the 23rd, he was very sensibly improved; on the 30th, one-half of his face was clear; the lower parts of his body were much better; and he could sit in a chair, and lie comfortably in bed. He continued daily to improve, till at last his eyes opened; but they were at first very weak; and he could scarcely see anything: his sight, however, gradually improved. On the 1st of January, 1842, not a single ulcer remained on his body: the skin became remarkably clear and fair, and the features, which for twelve months had been in such a state that it was impossible to more than guess at the position of his nose and eyes, were restored to their wonted appearance.'

"Adam Smith, in his 'Wealth of Nations,' informs us that the most beautiful women in the British dominions are said to be, the greater part of them, from the lower rank of people in Ireland, who are generally fed with potatoes. The peasantry of Lancashire and Cheshire, also, who live principally on potatoes and buttermilk, are celebrated as the handsomest race in England.

"Mr. Shillitoe, of Tottenham—a member of the Society of Friends—when about forty-five years of age, had suffered from ill health during many years; and was restored by adopting a vegetable diet, and water for drink. He lived till nearly ninety years of age; and at eighty could walk, with ease, from Tottenham to London (six miles) and back again. He gives the following account of himself:—'It is now thirty years since I ate fish, flesh, or fowl; or took fermented liquor of any kind whatever. I find, from continued experience, that abstinence is the best medicine. I do not meddle with fermented liquors of any kind, even as medicine. I find I am capable of doing better without them.'"

ALL PRIZE CATTLE DISEASED.—*From the Vegetarian Messenger, price 2d. Pitman, London.* "Once again we have a striking communication made to the public on the subject of the disease originated in the process of fattening animals. Scientific and other observant men have frequently thrown out that the animal is 'fattened' only at the expense of its health, and that as there are no fat animals in a state of nature, so the processes resorted to to make up the prize-fed monstrosities of Smithfield are immensely against the interests of the consumer of the flesh of animals.

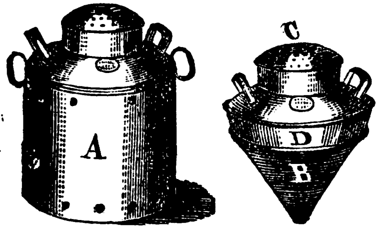
"'A question of much interest to the breeders of cattle, judges at exhibitions of stock, and the public, has been raised by Mr. GANT, a London surgeon. It appears that he was struck with the appearance of some of the prize animals at the late Smithfield Cattle Show, several of which also took honours at Birmingham; he followed them to the slaughter-house, and, as the result of dissection and microscopical observations, discovered that the hearts and proper muscular structure, the nutritious parts, were degenerated into unhealthy fat and oil globules, and that the lungs were the seat of extensively deposited tubercular disease, of a similar structure to that form of deposit usually found in scrofulous and phthisical subjects. This discovery, although not made for the first time, puts the matter in a light so serious as to command attention. It would seem also to point to the necessity for a change in the standard of what judges generally consider excellence.'

"We beg to call attention to the more complete explication of the above, as found in our present number. WHITLAW and others long since declared similar facts; but, now, with the stamp of greater authority, we may reasonably hope that Mr. GANT's researches will be made valuable to the public."

The Russians are practical Vegetarians. The hosts of workmen employed on the great public works of the empire subsist in summer on cucumbers and rye bread; and in winter the cucumbers are salted and eked out with chestnuts.

The prowess of the Russian soldier England and France have had melancholy occasion to test, and the *Times* correspondent in the Crimea was amazed to find that desperate wounds, which would have been the death of a flesh-eating Englishman or Frenchman, *did not* kill the Russian, whose food was coarse black bread, with oil and salt. And the case is the same with the Russian peasantry, from whence workman and soldier are drawn. Their general food is coarse black bread and garlic. A finer people, physically, all unite to say, there is not. In a climate severely cold they enjoy health and vigour, and, as one of the fairest tests of national well being, they rapidly increase in numbers. Spite of national jealousy, Russia is on the highway to greatness, and the future will, I have no doubt, find it one of the most useful and influential powers among the kingdoms of the earth; and while we cannot but profit by Russian prosperity and enlightenment, there is surely room enough in this wide world for the development of all without either trenching on the domains of the other. The Norwegian winter, as all know, is a severe one; but the Norwegians, like the Russians, are practical Vegetarians. They do eat flesh when they can get it, but that is but rarely, and is then eaten as a luxury, much as plum-pudding is by poor people in England. Yet the Norwegians, on their oatmeal and rye-meal, are robust and healthy, tall, and good-looking, and in no European nation are there more instances of extreme longevity. One fact, if reliable, is as good as twenty in proving our point, and facts might be adduced to tedium to show that the heat of the human body can be sustained in severe cold on the products of the vegetable kingdom, especially cereals. In Siberia no exiles in that wintry region endure the cold better than those who have been accustomed to a simple vegetable diet, and the Hudson's Bay Company have discovered that 2½lbs. of maize meal per day sustains the warmth and energy of their servants quite as well as the 8lbs. of fat flesh-meat formerly used, whilst the men themselves prefer it. Facts like these dispose of the common argument constantly brought against Vegetarians, about their system being impossible in cold climates. But, supposing it were as true as it is false that men could not live in severe cold without flesh or fat, why should that hinder any one from adopting a Vegetarian diet in the mild climate of England?—a diet recommending itself by its economy to the prudence, its pleasantness to the palate, and its innocent attainment to the benevolence and all the best feelings of man's nature. Why should any one make a supposed difficulty in the Arctic zone restrain him from a clear duty in Manchester or London? As Mr. SIMPSON, in a lecture, once pertinently asked, 'Will you defer your acceptance of Christianity until every rascal and every heathen has found it convenient to acknowledge its divine claim?' Do let us do right ourselves. The right is ever full of happiness and blessing.

CHEAP USEFUL STEAMER.—A separate gutta percha tube is attached for local steaming, of great service in wounds, abscesses, chronic rheumatism of joints, throat affections, and all is easily applied.



STEAM AND SPIRIT LAMP BATH. A, 6½ diameter, 8 deep to first rim. D, 1¾, B, 4½ deep; this sloping part holds a quart of water. C, perforated top. Inside A is a movable can, 3½ diameter, 2¼ deep, to hold a quarter pint of methylated spirits of wine, or rectified naphtha, to place inside A; light the spirits, then put in can, C D, with sloping point B into the spirits. If for spirit lamp, leave out C D B, put the little cover inside on spirit can, with two wicks. The person undressed, enveloped in blankets, or coverlids, or mackintosh, sits on a wooden-bottom chair, the steamer under. If at any time too hot, raise the blanket to let in air, or to make the spirits burn better. After steaming, sponge over with cold or tepid water, (see p. 61).

LEA MILLS, ONE MILE FROM CROMFORD STATION, DERBYSHIRE.

NATURE'S OWN MEANS OF STIMULATING THE FUNCTIONS OF ANIMAL LIFE.

We breathe in one minute, 18 pints of atmospheric air.
,, ,, ,, hour, 1,066⅔ ,, or 2 hogsheads 20 gallons.
,, ,, 24 hours, 25,607 ,, 57 ,, 1 ,, 7 pints.

There passes through the lungs—
In one minute, 8 pints of blood, weighing 9 pounds.
,, ,, hour 449 ,, ,, ,, 540 ,,
,, 24 ,, 10,784 ,, ,, ,, 12,960 ,,

1 circuit of the blood is performed in ... ... 160 seconds.
3 circuits [illegible] ,, are ,, ... 8 minutes.
540 ,, ,, ,, ,, ,, ... 24 hours.

In other words, there comes in contact in the lungs—
In one minute, 8 pints of blood to 18 pints of air.
,, ,, hour, about 1 hogshead of blood to 2 hogsheads 20 gallons of air.
,, 24 hours ,, 24 ,, ,, 57 ,, 1 ,, 7 pints.
(*Dr. Southwood Smith.*)

We inhale 79 parts of nitrogen, and exhale 77 parts.
,, ,, 21 ,, oxygen ,, 13 ,,
,, ,, a fraction of carbonic acid ,, 7 ,,
,, ,, a fraction of vapour of water 3 ,, (*Dr. Priestley.*)

In the mutual action that takes place between the air and blood in 24 hours—

The air loses	15,757·9131	grains, or about	32¼	oz. of oxygen
Unites with carbon	13,109·1040	,, ,,	27½	,, ,,
The body absorbs	2,648·8091	,, ,,	5	,, 248 grains
Nitrogen absorbed	2,267·1041	,, ,,	4	,, 347 ,,
The blood loses (carbon) ...	4,915·9132	,, ,,	10	,, 115 ,,
Carbonic acid formed ...	18,025·0172	,, ,,	37½	,,
,, ,, inhaled ...	105·1302		¼	,,
,, ,, exhaled ...	18,130·1474		37¾	,,

The weight of oxygen and nitrogen absorbed is just equal to the carbon consumed. *Menzies.*

One hundred inches of oxygen consumes 12½ grains of carbon out of 11½ hogsheads of oxygen inhaled.

We consume in one hour 1,905 cubic inches, or 9 gallons 7 pints of oxygen.
,, ,, 24 hours 45,720 ,, ,, 3 hogsheads 9 gallons ,,

THE THEORY OF ANIMAL HEAT, BY DR. CRAWFORD.

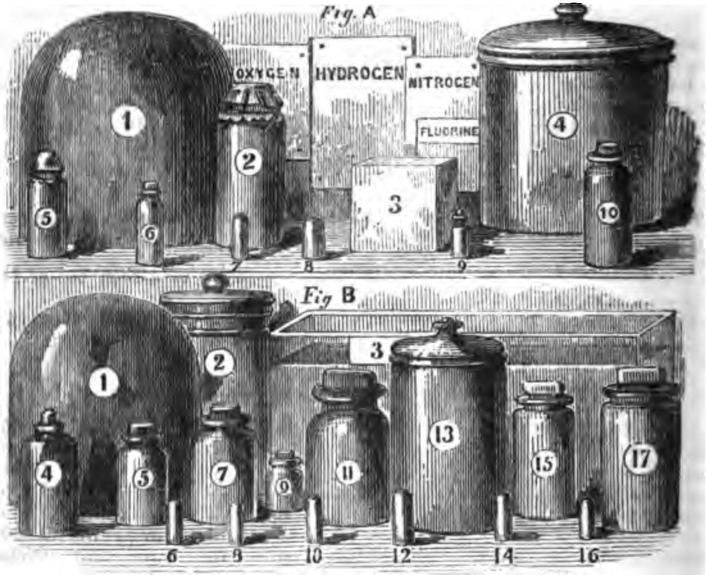
The specific capacity for latent caloric, taking water as the standard at ...	1·0000
Oxygen is ...	4·7490
Nitrogen is ...	0·7936
Atmospheric air ...	1·7900
Carbonic acid ...	1·6454
Arterial blood ...	1·0300
Venous blood ...	0·8928

The change of oxygen into carbonic acid in the lungs sets caloric free, and the change from venous to arterial blood at the same place absorbs the caloric set free, and retains it until the change from arterial to venous blood takes place in the capillaries, which are distributed through the whole body. We can assist or retard these processes, and enjoy or suffer in as just a proportion to our obedience or disregard of these causes, as an Infinite Creator has apportioned. Any person who neglects to keep the auxiliary respiratory muscles of the chest in a high state of contractibility by regular and judicious exercise, renders it a physical impossibility for the lungs to obtain a sufficient quantity of atmospheric air to duly arterialize the blood, so that it may transmit to the organs of animal life energy and force. *W. Monk.*

A person reclining on a couch breathes in one minute 500 inches of air.

Walking 1 mile per hour	800	,,	,,
,, 2 miles ,, ...	1,000	,,	,,
,, 3 ,, ,, ...	1,300	,,	,,
,, 4 ,, ,, ...	1,500	,,	,,
Running 6 ,, ,, ...	1,800	,,	,,

Physical health, like moral rectitude, is a personal matter. Neither a hydropathist, nor any other pathist, can make a person healthy, vigorous, and strong, no more than a minister can make his congregation pious and holy. Either may advise, direct, and instruct, but it is a personal matter to read, mark, learn, and inwardly digest both physical and moral phenomena; the blessing must be earned before it can be enjoyed. And He is faithful who has ordained as well as promised; He whose attributes are as conspicuous in his providential and preserving care of our physical bodies, as are his attributes of love, mercy, truth, and justice in the scheme of human redemption. *W. Monk.*



Composition of the Human Body.—The cut, as above, is taken from a glass case in the South Kensington Museum, London.

Figure A.

Ultimate elements of a human being weighing 154 pounds.

	lbs.	oz.	grs.
1. Carbon . . .	21	2	--
2. Phosphorus .	1	12	190
3. Calcium . .	2	—	—
4. Chlorine . .	—	2	47
5. Sodium . .	—	2	116
6. Potassium . .	—	—	290
7. Silicon . .	—	—	2
8. Magnesium .	—	—	12
9. Iron . . .	—	--	100
10. Sulphur . .	—	2	219

Oxygen gas, the quantity in a body weighing 154lbs., is 111lbs., which would occupy 750 cubic feet of space. (p. 389.)

Hydrogen gas, the quantity in a body weighing 154lbs. is 14lbs., which would occupy about 3000 cubic feet of space.

Nitrogen gas, the quantity in a body of the above weight is 3½lbs., and would occupy about 20 cubic feet.

Fluorine, the quantity in a body of the above weight is 2ozs.

Figure B.

Proximate principles of a human being weighing 154 pounds.

	lbs.	oz.	grs.
1. Gelatine . .	15	—	—
2. Fat . . .	12	—	—
3. Water . .	111	—	—
4. Sulphate of Soda	—	1	170
5. Carbonate of Soda	—	1	72
6. Chloride of Potassium		—	10
7. Chloride of Sodium (common salt)	—	3	374
8. Phosphate of Potash	—	—	160
9. Fluoride of Calcium	—	3	—
10. Peroxide of Iron	—	—	150
11. Fibrin . .	4	4	—
12. Phosphate of Magnesium . .	—	—	75
13. Albumen . .	4	3	—
14. Phosphate of Soda	—	—	400
15. Carbonate of Lime	1	—	—
16. Sulphate of Potash	—	—	400
17. Phosphate of Lime	5	13	—
18. Silica . .	—	—	3

My eye, accidentally, at the time of making the above ready for insertion, fell on the sale of Lady Anson's jewels, which produced £3,000, and is a striking commentary on the vanity of the poor soul when inhabiting the mass of carbon, phosphorus, fat, gelatine, &c., &c.

THE BREATH OF LIFE.

BY W. CROOKES, F.C.S.

(*From the "Popular Science Review:" Robert Hardwicke*, 192, *Piccadilly;* **2s. 6d.** *This Review contains much important information on various subjects, and the April*, 1863, *number gives Cut and Structure of Skin, very good.*

NOT only figuratively, but in actual reality, can the life of man be compared to a fire, or lighted candle. Respiration may be regarded as the same process as combustion, only performed in a slower manner. Fuel is placed in a furnace, and the combustion which we see take place with the evolution of heat and light is owing to the combination of the oxygen—that wonderful constituent of the atmosphere—with the carbon and hydrogen of the fuel. In a similar way we place food (which is fuel) in our bodies, and then, by the act of respiration, we draw into the lungs oxygen, and this, uniting with the carbon and hydrogen of the food, also produces a disengagement of heat.

Another point worthy of attention is, that the combustible matter of the food —the carbon and hydrogen—when burned in the body, by means of air drawn in by the lungs, produces exactly the same amount of heat as it would have done had the same quantity been consumed in an ordinary furnace by means of the free atmospheric oxygen; the only difference being that, in the latter case, the combustion takes place rapidly, evolving an intense heat for a short time; whilst in our bodies the fuel is burned more slowly, thus evolving less heat for a longer time—the total amount of heat liberated by the combustion of a given weight of carbon, whether it be burned in the form of coal or beef, being always the same.

This, therefore, is the cause of the high temperature of the human body. We each carry about within us a portable furnace of the most perfect construction. Fuel is thrown on at intervals during the day, the need of a fresh supply being made known by the feeling of hunger (as it is in some steam-engines by the ringing of a bell); whilst a draught of air is drawn in at each inspiration, by which means the process of combustion proceeds uninterruptedly.

The analogy is strictly correct, even if pursued further. In a furnace we can augment the energy of combustion by increasing the draught of air; and so in our bodies, if we increase the normal number of respirations per minute, a considerable rise of temperature is the result, the excess of heat being radiated into the surrounding atmosphere, and carried off in the form of perspiration. This explains why persons in Arctic regions consume such enormous quantities of food in comparison with those in more temperate latitudes. In order to keep up the natural heat of the body (which is invariably the same—99° 5′ Fahr.) in the midst of the intense cold of the surrounding media, it is necessary for considerable quantities of fuel to be rapidly burned in the body, so as to restore the amount of heat lost by radiation; and not only is the total weight of food which is required in the Arctic regions vastly greater than that consumed in warm climates, but the former contains a greater per-centage of combustible matter; the fruits which constitute so large a proportion of the food of the inhabitant of the South containing not more than about twelve per cent. of carbon, whilst the blubber or fat which forms the staple diet of the Esquimaux or Lap contains nearly eighty per cent. of that combustible. Plenty of food, therefore, takes the place of clothing, in the same manner as warm raiment is a partial substitute for food. The warmer we are clad, the less fuel it is necessary to burn, in order to keep up the supply of animal heat lost by radiation; whereas, if we were to walk about naked, or were exposed to an Arctic temperature, we should be enabled to consume twenty or thirty pounds of whale's fat, together with several quarts of train oil and brandy, without difficulty, finishing off with a few tallow candles by way of dessert; the combustible matters here indicated being not more sufficient to supply the enormous radiation of heat consequent upon a difference of perhaps 120 degrees between the temperature of the body and that of the external air.

The analogy between the life of man and the flame of a candle, or stove, is thus seen to be something more than a mere fanciful theory. Warmth and vitality are produced equally in each case by the combination of combustible matter with the oxygen present in the atmosphere; and in either case, if the supply of air be insufficient or vitiated, a similar result will follow; for the pale, sickly, flickering flame of a candle burning in an atmosphere deficient in the necessary supporter of combustion, or containing noxious gases, is strictly parallel to the delicate, sickly, etiolated appearance caused in human beings by an impure atmosphere, whilst the ultimate result is the same in both cases, namely, the extinction of vitality, or death.

An attentive examination into the phenomena of combustion, as exemplified in the burning of a candle, shows us, therefore, that not only is it necessary to take account of the food which we eat—that is to say, of the fuel with the combustion of which we keep up the requisite temperature—but that a careful attention to the quality of the air we breathe is no less important to our health and comfort. A candle burning in a close room not only consumes a certain quantity of the vivifying principle of the atmosphere, diminishing the amount of oxygen present and available for other purposes, but it likewise communicates to the air an equal volume of another gas—carbonic acid—a substance possessing the most deadly properties—the pure gas suffocating animals placed in it as if they had been plunged into so much water. Even when it is present in the air in only small quantities, it produces very deleterious effects, 4 per cent. acting like a narcotic poison in the atmosphere, and even a less proportion producing depressing effects of a most injurious description. If, then, a candle, which consumes so small a quantity of oxygen, causes such a change in the atmosphere, how much more will the respiration of human beings tend to vitiate it. It has been calculated that a man every twenty-four hours consumes nearly 400 cubic feet of air, with evolution of the deleterious carbonic acid gas; and that were he to be inclosed for twenty-four hours in a room eight feet square by nine feet high, he would be moribund at the end of the time. And these are not merely fanciful or supposititious cases. The action of contaminated confined air upon the health of the inhaler is one of the most potent and insidious causes of disease. Any addition to the natural atmosphere that we breathe must be a deterioration, and absolutely noxious in a greater or less degree. Our health, says Thakrah, would immediately suffer did not some vital conservative principle accommodate our functions to circumstance and situation. But this seems to get weaker from exertion. The more we draw on it, the less balance it leaves in our favour. The *vis vitæ*, which, in a more natural state, would carry the body to seventy or eighty years, is prematurely exhausted, and, like the gnomon shadow, whose motion no eye can perceive, but whose arrival at a certain point at a definite time is inevitable, the latent malaria, which, year after year, seems to inflict no perceptible injury, is yet hurrying the bulk of mankind, with undeviating, silent, accelerating rapidity, to a premature grave. Pure air is the food designed by nature for the constitution. Man subsists upon it more than upon his meat and drink; and there are numberless instances of persons living for months and years on a very scanty supply of aliment; but no one can subsist even for a few minutes without a copious supply of the aërial element.

Deaths from the respiration of many persons in a confined space are, unhappily, not rare; and without going back to the shocking instance of the Black Hole at Calcutta, we may refer to an equally lamentable occurrence which happened a few years ago in an emigrant ship, in which, during a storm off the English coast, the emigrants were confined below. In less than six hours more than sixty persons perished!

The paramount necessity which exists, according to these instances, for fresh air, equally holds good in less extreme cases. Just as surely as a total deprivation of oxygen, or the presence with it of any excess of deleterious gases, produces death, so the breathing of a partially-inhaled atmosphere is equally certain to occasion sickness and disease, if its inhalation be persisted in. The evils of exhausted air are also more to be guarded against, because persons can live in it without being aware of its danger, as far as their sensations are concerned. When we enter a crowded assembly on a cold day, the air is always at first repulsive and oppressive; but these sensations gradually disappear, and we then breathe freely, and are unconscious of the quality of the atmosphere. Science, however, reveals the fact, that the system sinks in action to meet the conditions of the impure air; but it does so at the expense of a gradual depression of the vital functions; and when this is continued, disease follows. *No disease can be thoroughly cured when there is a want of ventilation.* It is related that illness continued in a family until a pane of glass was accidentally broken, and then it ceased: the window not being repaired, a plentiful supply of fresh air was admitted. Nearly all the churches in the empire require some artificial means of ventilation to render them physically fit receptacles for the body during a prolonged service. The Sunday-schools, also, as a general rule, are *very ill ventilated;* and lessons in the second hour are far worse rendered than in the first, solely arising from a semi-lethargic coma that comes over the pupils breathing a carbonic air, which has already done duty and been inhaled by others several times. However much to be regretted, it is still true that people will sometimes sleep during the sermon. Now, the minister must not be twitted with this; for, with the oratory of a Jeremy Taylor, or of a Tillotson, people could not be kept awake in an atmosphere charged with carbonic acid, the emanations of a thousand listeners.*

Instances innumerable might be pointed out in connection with our trades and professions, showing that no one can break with impunity the law of nature, which demands that the food destined to nourish and warm the body should be converted into heat, and vitalised by a constant supply of fresh and pure air. The importance of this subject becomes more evident if we turn to a few statistics. In a life of fifty years a man makes upwards of 500 millions of respirations, drawing through his lungs nearly 170 tons weight of air, and discharging nearly 20 tons weight of the poisonous carbonic acid. It has been also calculated that, to ventilate a room effectually, every person requires ten cubic feet of fresh air per minute;† a church, therefore, 80 feet long, 50 feet wide, and 40 feet high, and containing 1,000 persons, would require the whole atmospheric contents of the building to be renewed every sixteen minutes. A room containing a million cubic feet of air, in which were assembled 10,000 persons, would likewise require a total change every ten minutes; and an apartment twelve feet each way, with ten persons in it, would require an entire change of air every seventeen minutes.

This quantity of ten cubic feet of air per minute for each individual is what is required to supply him with the amount of oxygen necessary for the performance of the functions of respiration; whilst the constant change of the atmosphere is imperatively necessary to get rid of the products of respiration, viz., the carbonic acid and aqueous vapour, as well as the effluvia from the body; for, disagreeable as it may be to refer to such a subject, this is the most noxious cause of contamination with which we are in the habit of coming in contact. "We instinctively," says Bernan, "shun approach to the dirty, the squalid, and the diseased, nor use a garment that may have been worn by another; we open sewers for matters that offend the sight and smell, and contaminate the air; we carefully remove impurities from what we eat and drink, filter morbid water, and fastidiously avoid drinking from a cup that may have been pressed to the lips of a friend. On the other hand, we resort to places of assembly, and draw into our mouths air loaded with effluvia from the lungs, and skin, and clothing of every individual in the promiscuous crowd: exhalations, offensive to a certain extent from the most healthy individuals, but which, rising from a living mass of skin and lung in all stages of evaporation, disease, and putridity, and prevented by the walls and ceiling from escaping, are, when thus concentrated, in the highest degree deleterious and loathsome."

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* Piesse.

† This is the minimum which should be allowed. In the House of Commons, which is, perhaps, the most perfectly, as it is certainly the most scientifically ventilated building in the world, Dr. Reid never allows less than thirty cubic feet of air per minute for each member, when the room is crowded. and on many occasions sixty cubic feet have been allowed.

The evils produced by allowing the carbonic acid from the breath to accumulate in the air have been already mentioned; those engendered by inhaled animal effluvia are still more fatal in their results; for, according to competent authorities, it seems to be an invariable result that the accumulation and stagnation of the breath and perspiration of human beings crowded for a period in confined air, and neglecting personal cleanliness, produce plague or fever that may be communicated to healthy persons by contact or respiration. The most memorable of this is the Great Plague of London, which was caused by the total absence of proper ventilation in the filthy and overcrowded hovels in which the greater part of the poorer population of London lived, together with the filth and putrefying abominations which habitually filled not only the streets but even the houses of the lower classes. According to Bernan, the gaol fever was another disease which, arising from a neglect of the vital necessity for fresh air, was, a few centuries ago, an object of dread to society. The unfortunate and the criminal alike were immured in damp, cold, ill-aired dungeons, and kept in a state of inactivity. They inhaled the pent-up noxious effluvia emitted from their own bodies; and, from the want of means for personal purification, their clothes and bedding during their incarceration became saturated with the fatal exhalations. In this condition the miserable prisoners engendered, and became victims to, a disease of deadly malignity. They sickened, and with little apparent illness they died. The prison-house was thus the focus of a contagion that spread far and wide beyond its walls, and spared few who were so unhappy as to come within its influence. It was remarked, that although a prisoner happened to escape the infection, his clothes, nevertheless, emitted a pestilence that scattered death around him wherever he went. The assizes held at Oxford in 1577 were long remembered, and were called the *Black Assizes*, from the horrible catastrophe produced on that occasion by the gaol fever. Baker, in his Chronicle, tells us, that *all* who were present in court died in forty-eight hours—the judge, the sheriff, and 300 other persons!—so terrible was the retribution suffered by the community for its hardness of heart in denying to criminals even those personal requirements necessary for avoiding disease and preserving life.

Another similar catastrophe is recorded by Blaine as having occurred in 1750. During the sessions a sickening, nauseous smell was experienced by the persons in court, and within a week afterwards many who had been present were seized with a malignant fever. Among those who died were the Lord Mayor, the two judges, an alderman, a barrister, several of the jury, and forty other persons. It was remarkable that the prisoners who communicated the infection were not themselves ill of fever; and it was still more remarkable that none of those who were ill of it (to the greater number of whom it proved mortal) communicated it to their families or attendants, which showed that persons who were treated in clean and airy apartments, as those were who fell victims to it, do not communicate the disease to those in the constant habit of attending upon them.

Historians relate with just indignation that nearly three hundred martyrs died at the stake in the reign of the bigot Mary. But how insignificant appear the number and sufferings of these victims of regal fanaticism when compared with the tortures of suffocation and death from stench that were endured by thousands of persons in this and succeeding reigns, when every prison was a legal sepulchre.

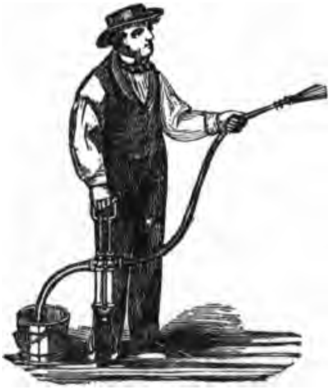
Equally striking are the *good* results which have followed a judicious application of ventilation where it was formerly absent. It is scarcely possible to conceive a more repulsive and abominable state than that in which our ships of war were during the latter-part of the last century, owing to the disregard, or rather the studied opposition, with which those then in authority treated all proposals to improve their ventilation. We regard other nations with whom we happen to be at war as our enemies, but a few figures, eloquent in their simplicity, will convince any one that incapacity, narrow-mindedness, or obstinacy in high places, are vastly more fatal in their results to our gallant sailors than the most formidable enemy they ever faced. In the year 1779 there were 70,000 seamen and marines voted by Parliament; of these 28,592 were sent sick to the hospitals, or 1 in 2.4. In 1784, of 85,000 men afloat, 21,371 were sent ashore sick within the year, or 1 in 4. But in 1804, when ventilation was partially, if not thoroughly, carried out in every ship, of the 100,000 men of which the navy that year consisted, 11,978 passed through the hospital, or only one in 8·3.

The evils of inefficient ventilation have been strikingly shown in the case of the Custom House, where the difficulty of ventilating a large public room has been very manifest. There the atmosphere in some of the apartments was so defective, as to produce general symptoms of ill-health among the officers whose official seats were placed in it. The functionaries were described to have had "a sense of tension or fulness of the head, with occasional flushings of the countenance, throbbings of the temples and vertigo, followed not unfrequently by confusion of ideas" that must be very disagreeable to persons occupied with important and sometimes intricate calculations. A few were affected with unpleasant perspiration at their sides. The whole of them complained of a remarkable coldness and languor at their extremities, more especially the legs and feet, which became habitual. The pulse in many cases was more feeble, frequent and sharp, and irritable, than it ought to have been. The sensations in the head occasionally rose to such a height, notwithstanding the most temperate regimen of life, as to render cupping requisite, and at other times depletory remedies; and costiveness, though not a uniform, was yet a prevailing symptom.

The identity between the combustion of a candle and that living kind of combustion which is ever going on within us has thus been clearly exhibited. Like the candle, man depends for his life and vigour upon the chemical action exerted between the atmosphere and combustible matter; the combustion of the latter giving rise in each case to heat and vitality. Like the flame of a candle, too, man's health and strength languish and faint unless properly and uninterruptedly supplied with that mysterious breath of life—oxygen; whilst the feeble hold which the flame, even under the most favourable circumstances, has upon the wick, and the ease and totality of its extinction by the most trivial circumstance—not only by a deprivation of air, but even by a puff of wind too much,—should teach us, even in our pride of health and strength, that our spark of life may be extinguished by the same causes, and our bodies may be left lifeless as a snuffed-out candle. The food—the combustible matter—may be there all the same; the oxygen may be in waiting, ready to combine with it; but the spark of fire, that spirit of life which man receives direct from his Creator, is absent, and without this all else is as nothing.

One more lesson from our candle, and we have done. What becomes of the human soul when it has left the body? What becomes of the flame when the candle is extinguished? Must our philosophy halt here? or will it turn round upon us, and attempt to prove, in scientific jargon, that there is no such thing as a future? We think not. We believe that, as the relationship between the candle and man bears strict analogy from the first kindling of the mysterious vitalising principle, through the varied phenomena of life, in sickness and in health, and even in the more mysterious phenomena of extinction—so can the analogy be carried further into the dim shadowy realms beyond.

If there is one question more than another which has occupied the attention of modern philosophers, it is that relating to the *conservation of force*, or as it sometimes is called, *of energy*. It has long been admitted that matter can neither be created nor destroyed, and the whole tendency of modern discovery is now directed to show that *energy* is equally incapable of extinction. So long as it is exerting its action in a definite way, shining and glowing as a candle flame, evolving the *forces* of heat and light, we take note of it by means of our outward senses; but when the flame goes out, are these forces annihilated? Assuredly not. The energy which hitherto was occupied in the production of heat and light has only changed its immaterial form; it still exists in undiminished quantity, though it is now incapable of appreciation by our material senses. For just as the forces evolved by burning fuel are transformed into mechanical motion in the steam-engine, and just as mechanical motion is equally capable of being re-transformed into heat, light, electricity, or chemical action—just as every word we utter, acting on the material atmosphere around us, resolves itself into aërial waves of sound, which for ever afterwards vibrate with diminishing intensity, but expanding area, from one extremity of the atmosphere to the other, retaining always the same amount of energy as it did when the mechanical motion of the breath and lips first gave it birth—so do the forces once born to activity when the candle is lighted live to the end of time undiminished in intensity, although changed in character. When the flame is naturally extinguished these living forces do not die, but become absorbed into that vast reservoir of energy which is the source of all light and life upon this globe.



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(*From the "Times," January,* 1861.)

IT IS COLD THAT KILLS, AFTER ALL.

We know not by what freak of fashion it happens that the English people are wont to speak of severe weather in respectful terms, and honour with such epithets as "bracing" a season which brings mourning into many a family. Did they but realise the truth, these complimentary expressions would sound like the Greek euphemisms for the infernal regions, or the endearing diminutive appellations which mediæval gaolers loved to apply to instruments of torture. Heat and damp are treated with no such tenderness, and the most energetic adjectives and participles of the Anglo-Saxon language are freely employed to characterise these unpopular conditions of the atmosphere. Yet a little reflection would convince us that cold is a far deadlier enemy of the human frame than either. If heat kills its thousands, cold kills its tens of thousands. One need not be a physiologist to understand that that which forcibly closes the pores, suspends the functions of the skin, violently repels the blood from the surface to the interior vessels of the system, lowers the action of the heart, obstructs the circulation, and benumbs the extremities, must act injuriously on the vital powers. Hot and damp weather have their specific maladies, and the more vivid consciousness of weakness which these summer ailments produce has probably contributed to bolster up the vulgar error against which we are protesting. Superficial derangements are often more sensibly felt than those which make war on life itself; and, while the former are felt more or less by all, the latter select their victims among persons already debilitated by want, disease, or old age. While the strong man is unconsciously summoning up his reserve of digestive power to repair the increased waste of tissue, the feeble lungs of the invalid are craving for fuel, which the over-taxed digestive organs can no longer supply fast enough. The "sensible warm motion" in the veins of the one, stimulated by exercise, easily resists the external cold, and abundant nutrition even creates an appetite for increased muscular exertion; while the starved organs and fibre of the other are wasting away like a burning lamp. It is simply a question of organisation. Delicate shrubs cannot survive an intense frost, and the vegetable world generally suffers in a greater degree than the animal from an excessively low temperature. Some animals, however, like certain plants, exhibit the devitalising effects of the winter by the habit of "hybernation," or passing this season in a state of sleep; while the bodily and mental powers of human beings inhabiting the frigid zone are dwarfed and stunted by the climate. It is strange, then, that we should welcome with so much zest an extreme of temperature so uncongenial to the vigour and longevity of our species.

No one who peruses the Registrar-General's returns, or even watches the daily catalogue of deaths in our own columns, will be inclined to dispute these conclusions. The mortality of London for the week ending Saturday, January 19, reached the appalling number of 1,926 deaths—an amount which not only exceeds the estimated number by 585, but is about double the average of a few weeks during the autumn. When we remember the unprecedented quantity of rain that fell in the year 1860, we could hardly have a better illustration of the comparative effects of cold and damp on the public health. Of course, we were prepared to find that the increased aggregate was chiefly due to acute disease, especially of the respiratory organs. Accordingly, we are told that "pulmonary complaints, exclusive of phthisis, carried off in the week 702 persons, while the corrected average for corresponding weeks is only 301;" and that, among these, deaths from bronchitis have been nearly three times as numerous as usual at this time of the year. Apoplexy has been so common during this cold season that it is stated by one eminent physician to have almost assumed an "epidemic" form; we are surprised, therefore, that it does not exceed the average in this return by more than 44 to 30; but paralysis has increased in a still greater proportion; and "heart diseases were fatal in 119 cases, while the average is only 53." We learn from Dr. Letheby's Reports, that in the city of London the same general results have been obtained in that district, though of a still more marked character, and the mortality there during last week actually rose within seven of the level reached at the height of the cholera in 1848. There is no appeal from facts of this kind. "Bracing" weather puts our constitutions to a severe test, and where the flickering torch is extinguished, it is highly probable that the vital flame is proportionably diminished, even in the hardiest. Considering the present low type of disease, and the all but universal demand for stimulants in cases for which bleeding used to be esteemed a sovereign remedy, it is painful to think what might have been the effect upon the half-famished population in the east of London, who have no means of resisting the first assaults of sickness except by obtaining admission to the workhouse or the hospital, had the frost lasted as long as those of 1796 and 1814. It is destitution which, by lowering the stamina and reducing the means of nutrition and clothing just when food and warmth are most essential to life, swells the death-rate so fearfully. It is too probable that a large proportion of the surplus mortality was preventible—if those evils can be called preventible which nothing but habits of providence, still rarely cultivated among our working orders, or a perfect system of occasional relief still remaining to be devised, could have availed to ward off. A "struggle for existence" (to use an expression that has lately become popular) is perpetually going on—not, indeed, in the form of competition between different classes of society, but in the form of self-preservation among the lowest class. So long as there exists a vast body of workmen absolutely without capital or savings, and dependent on daily labour for daily subsistence, the accidents of temperature must swell the bills of mortality indefinitely. Cold immeasurably increases the poor man's wants, while it cuts short his ability to supply them, and sends him wandering about the streets. No wonder that he is tempted to spend the first sixpence which he receives in the purchase of stimulants to overcome the stupor of semi-starvation, which is too often attributed to drunkenness, when it is really the symptom of an arrested circulation and an exhausted brain. The general good health of sailors in the Arctic regions proves nothing against the depressing influence of cold, for these sailors are picked men, in the prime of life, provided with the most generous diet, and protected with the utmost care against the effects of the climate. Under such circumstances it may, perhaps, be possible to become "acclimatised," and to feel the cold less the longer the exposure to it; but, where each succeeding day's starvation is drawing upon a stock of strength always waning and never replenished, the very opposite result must follow, and disease progress towards a climax. The mortality of the last week of frost has been heavier than that of any which preceded it, and no considerable diminution must be expected for some little time. Happily, we have now turned the third week in January, after which period we are taught, by "an average of seventy-nine years," to expect a rise of temperature. If the old proverb is to be verified by an early and hot summer following on this memorable winter, let us not too hastily wish the frost back again, or forget that the weather which gives tone to the nerves, and a heightened air of comfort to the firesides of the rich, is far more noxious than the droughts of July or the dreaded effluvia of the Thames, and carries famine and death to the poor man's home. There can be no doubt, however, about the general effect of cold upon the public health. The observations which we recently made upon this subject are confirmed by the invariable testimony of figures through a long period of time. In all the thirteen years which have elapsed since 1847, there is no exception to the established rule. Winter, whether mild or severe, is the season most dangerous to life in these regions of the globe. The first quarter of the year—that is to say, the interval between the last day of December and the first day of April—always yields the greatest number of deaths. Nothing short of an epidemic pestilence can interfere with this result. In 1849 and 1854 we were visited with cholera, and in those years, and those only, the deaths of the third quarter exceeded those of the first. In the latter of the two instances, however, cold soon re-asserted its powers. The winter of 1854-5 was very severe. The frost was not, indeed, quite so intense as it was a month ago, but it was of longer duration, and the consequence was that the deaths in the first quarter of 1855 considerably exceeded those of the previous summer, though the returns had been swelled by the effects of the plague. Apart from the results of these extraordinary visitations, nothing can be plainer than that the standard of public health rises with that of the temperature. Deaths are most numerous when cold is most severe. They decrease with unerring regularity as spring succeeds to winter, and become fewer still when summer succeeds to spring. As winter returns once more they once more increase, and so runs the course of mortality year after year, with the certainty of the seasons themselves. An epidemic, as we have said, will destroy the order of things; and, as autumn is the time of epidemics, that season is liable to occasional excesses of mortality. For instance, the greatest number of deaths registered in any one of the fifty-two quarters composing the tables before us, is that returned for the cholera period of 1849—viz., 135,227; though the cold of Christmas, 1855, fell very little short of this in its effects, the deaths in that period being 134,542; but, with this exception, and the less conspicuous one of 1854, the gradual decrease of mortality as the sun acquires power, and its increase once more as that power declines, are features so constant that it is impossible to misinterpret them. Heat, in short, does us no harm, except when it contributes to the generation of a pestilence. In the ordinary course of things it is favourable to life; while cold, by creating demands which among the poorer classes cannot be satisfied, tends invariably to intensify privation, and so multiply deaths. The satisfactory character of the returns for last year is due in great part, no doubt, to the weather which prevailed, and which, though by no means agreeable, was distinguished, upon the whole, by moderate temperature. There was a good deal of cold at the beginning of the year, and its results are perceptible enough in the returns of the first quarter; but after this had disappeared, and before the cold of the present winter began, the mildness of the seasons was remarkable. We had really no hot weather at all, and consequently, though we suffered in other respects, we became exempted from the access of disorders which a hot summer or autumn often brings. Besides this, the incessant rain replenished our springs and purified our sewers, so that until winter overtook us, and the cold became felt, the mortality was extremely low. Once only in the fifty-two quarters is there a return below that for the third quarter of 1860; and, indeed, this exception would probably disappear if the figures were corrected according to the increase of population in the interval. We must not, however, omit to remark, that over and above the influence of atmospheric conditions, that of sanitary science seems to be making itself felt. We are assured that the activity of the health officers in various districts is at length producing its effects; and when this influence comes thoroughly into operation, we may look for a material modification of the quarterly returns. There is a large margin yet for improvement. As many as 90,000 deaths a-year are still considered preventible.

THE TEMPLE OF WOE.

THE TEMPLE OF WOE; OR BRITAIN'S CRY AND CURSE!!—Having finished a pleasant walk, I sat down on an old oak bench with my newspaper, and was reading an account of the execution of Hans Macfarlane and Ellen Blackwood, for the murder of Boyd, at Glasgow, when a little girl came up and made a very modest curtsey; she had an interesting countenance, but marked with early sorrow. She told me she had two little sisters; that her mother was dead; her father did nothing but drink; and that she had to beg bread for herself and little sisters (statements I afterwards found to be correct). I put my hand in my pocket, intending to give her a penny, but the little timid thing ran away, frightened by the yelling and cursing of a drunken harlot, who was swinging her arms in the air, and vowing vengeance on a number of boys and girls who were shouting at her. At the same moment a crowd of people were running to see a man the police were taking to prison for house-breaking, and whom they had apprehended in a gin shop. Murderers, robbers, harlots, and beggars, all crowding before my mind together, led me to think there must be some terrible cause at work. Might not Hans Macfarlane, Ellen Blackwood, the enraged harlot and the gin-drinking robber, once have looked and been as innocent as the little timid beggar? These reflections produced a vision of the mind, which, however strange, is, alas! too true.

An extensive and beautiful valley spread out before me; in the middle of which stood a magnificent temple, octagonal or eight-squared in form, and every square a different style of architecture. On every side a door, seven for entrance, and one for an outlet. Over the front entrance was a spirited picture of the Rising Sun, and, in large gilt letters, "British and Foreign Wines." Over three doors on the left, "Gin, Rum, Whisky;" and on the right, "Ale, Porter, Brandy." The letters were vermilion and gold, curiously enriched with coiling, hissing serpents. The eighth and back door was covered with black cloth. Over it was a picture of the Setting Sun, and on a dark lead-colour ground was written, in black letters, "The wages of sin is death." The vast concourse of people crowding and pressing to enter the temple by the various doors was perfectly astonishing: every grade, station, and character had their representative in the mighty throng. In at the front, or wine entrance, went cardinals, bishops, priests, preachers, judges, statesmen, magistrates, lawyers, doctors, merchants, generals, admirals, and some classes of tradesmen, together with many elegantly dressed ladies. At numbers two and three, Brandy and Whisky doors, went in smaller trades and professional men, such as attorneys, stewards, auctioneers, grocers, agents, small masters, overlookers, and half-pay officers. At numbers four and five, Gin and Rum doors, fearful gangs of showmen, blacklegs, pickpockets, jockeys, swindlers, impostors, bullies, harlots, soldiers, sailors, gamblers, old women, young women, and even children. At the sixth and seventh, or Ale and Porter doors, went in dragmen, cabmen, carters, colliers, and all classes of mechanics, with their sweethearts and wives.

From the inside of the temple proceeded every possible, variable, conceivable sound. The organ, piano, harp, violin, dulcimer, trumpet, cornet, bugle, and horn; the sweet mellow voice of song; the wild laugh, loud shout, and rattle of the dance; the fiery eloquence of the political orator; the angry growl of the secular debater; the deliberate, polite, cautious, gentlemanly controversy; also fighting, cursing, swearing, blasphemy, screaming, yelling, roaring, and groaning, with other sounds awfully appalling, like the wild, wild shriek of the murdered and dying.

Beyond the temple, in the form of a crescent, stood eight extensive, costly, but gloomy-looking buildings. The judgment hall, insolvent debtors' court, infirmary, madhouse, penitentiary, tower, gaol, and workhouse. Dividing these buildings in the centre was a graveyard, in the middle of which was an upright post and crossbeam and halter; over the archway leading to the burial-ground was written, "Hell and destruction are never full." But there was one fact struck me, which I think especially worthy of note: there were paved roads leading from the back door of the temple to all the gloomy buildings behind. Those most travelled led to the prisons and graves. Behind, but towering above those gloomy buildings, were the masts of a transport ship, waiting for its cargo of human misery and degradation.

In the spacious area between the back door of the temple and the gloomy building was gathered a vast crowd of officers belonging to the various establishments—policemen, with truncheons and handcuffs; poor-law officers and parish overseers, with inkhorns and certificates; judges, magistrates, and lawyers, with wigs, red bags, and briefs; surgeons, with saws, knives, lancets, stomach pumps, lint, and bandages; cunning quacks, with pills and nostrums; madhouse doctors, with straps, strait jackets, and razors; coroners, with camphor bottles and blank schedules; undertakers, with crape, weeds, black horses, dead-carts or hearses. These were so numerous as to appear like a dark forest, and were attended by the hangman, with cap and halter; grave-digger, with mattock and spade; and the priest, with surplice and book. These were all incessantly employed in the vast torrent of misery, wretchedness, and death. Rolling from the temple, smitten with every mortal woe, were ruined merchants, bankrupt tradesmen, penniless paupers, paralytics, parricides, and perjured, polluted priests; thousands rotting of a loathsome disease; myriads of females, with faces bloated, and reputation blasted; screaming maniacs, and raving furies. Others with gout, erysipelas, dyspepsia, fluxes, dysenteria, neuroses, comata, fits, convulsions, melancholy, consumption, spasms, hypochondria, idiocy, swellings, dropsy, cholera, polyidpsia, apoplexy, and many other diseases, besides the maddest of all madnesses, delirium tremens. Others with cloven skulls, gashed faces, shattered teeth, arms, ribs, and legs broken, bodies pierced and torn, throats cut, besides numberless suicides, all

Rushing down
The deepest depths of dark despair,
To be with devils damned.

On the top of the temple, a giant form was pacing its ramparts; his eyes glared like balls of fire, and with infernal delight he surveyed the scenes of horror passing below. This being was the master-spirit and active agent of the establishment. His name was Apollyon; and when he spake, as speak he did, the echo of his voice seemed to reverberate from the poles:—

"To you that malt and brew,
And vend, and you that legislate,
Distil, and drink, my noblest thanks
Are due: since from my soul
I vengeance swore against the Eternal,
And plotted the destruction of the
Human race, in phalanx joined,
You gathered round, and valiantly assisted.
Millions to my kingdom now are come,
And millions more your noble deeds
Shall send me there; the hosts which
O'er the battlements of heaven with me
Were hurled; the legions still at my command,
Have me commissioned to return to you
Their warmest greetings."
Then, with a piercing laugh, the
Sound of which sent the blood freezing
To the heart, he disappeared, his dismal
Work of desolation still to carry on.

A few paces from the front of the temple, on the base and up the sides of a mountain, whose top towered to the clouds, was gathered a multitude numbering ten thousand times ten thousand, and thousands of thousands. Millions of these were looking with sorrowful interest on the temple and its attendant horrors; for, strange to say, there was not one of the vast host but were involved in the consequences arising from its existence. Orphans were there, whose fathers had been executed for the murder of their mothers. Fathers were there, whose sons had been once hopeful, and on whom they had built their highest hopes and expectations, but had seen them carried to the judgment hall, or prematurely to their graves. Mothers in deepest sorrow, lamenting their daughters in the asylum and penitentiary. Sisters and brothers clothed in habiliments of mourning, indicative of family bereavement, all consequent on the havoc produced by the temple.

Dividing the front of the temple from the base of the mountain, was a beautiful river, spanned by seven artificial bridges; the name of the first was "Little-drop;" of the second, "Moderation;" the third, "Customary;" fourth, "Necessary;" fifth, "Expedient;" sixth, "Fashionable;" and seventh, "Secret." All these led from the base of the mount to the various entrances of the temple; and it was perfectly appalling to see the vast crowds of people rushing over the bridges, seemingly bent on both temporal and eternal ruin.

Amongst the countless host on the mountain, thousands of bustling officers and tax-gatherers were moving to and fro, demanding from the people a per-centage on their rental for the support and maintenance of the gloomy buildings behind the temple; hundreds of thousands, yea, millions of pounds sterling was annually extorted from the hard earnings of the industrious, numbers of whom were forced to pay the last farthing, or suffer the spoiling of their goods, or imprisonment, to uphold its attendant consequences. Some asked, Is there no relief, no escape, no remedy for this terrible state of things? Shall this vampire, this hydra-headed monster, dwell in our very midst? Shall this withering. blasting, desolating hurricane still sweep over the land, and nothing be done? Shall this "Temple of Woe" still send forth its hot, pestiferous, pestilential breath, more destructive and deadly than any plague, more appalling than any scourge that ever visited fallen man since the deluge, and nothing be done? Shall legions of our fellow-men be smitten down and overwhelmed with physical, social, moral, and eternal ruin, making this otherwise beautiful world a vale of tears, and nothing be done? Let us petition Parliament to take this question into consideration, was the answer. Large sheets of paper were flying in every direction, which when covered with signatures were forwarded to the senate; but no answer. Let us request them to close the Temple of Woe on a portion of the Sabbath. A loud response reverberated through the multitude. The senate a long time hesitated, but it was done. But this made scarce a perceptible impression; the fatal consequences of its existence still rolled on. Let us send missionaries to tell them of the delusion respecting the articles in the temple being useful, and advise them only moderately to partake of them. But this was not effectual, the tide of death still rolled on. Let us send our ministers and preachers to warn the multitude of the terrible consequences arising from visiting the temple. These warnings were given, but the ministers were discovered privately entering the temple, and the people turned away from them disappointed, and the ruin still rolled on.

Let us break down the bridges and cut off the passages to the temple, was shouted by some; but a murmur was amongst the multitude, and a debate long and loud agitated the vast assembly. Some replied, Shall we destroy the Moderation bridge? Others, the Customary bridge? Others, the Necessary bridge? Others, the Fashionable bridge? Some, the Secret bridge? Many, the Expedient bridge? But a whole torrent of voices opposed the destruction of the Little-drop bridge. While they were quarrelling amongst themselves, the tide of misery still rolled on. Numbers that opposed the destruction of their own favourite bridges, expatiated largely on all commercial establishments being closed on the Sabbath and the inconsistency of the temple being open on that day, and proposed another petition to prevent it; but the vast yell of the brewers, venders, distillers, maltsters, legislators, and infidels, with numberless others interested in its existence, rendered the call for its being closed on the Sabbath for a time impossible. and the tide of misery still rolled on. Again, the demand. louder and more general, was made, that the Little-drop bridge should be destroyed; and without waiting for the consent. or caring for the scoffing, scorning, or mockings from the multitude, thousands commenced the attack, with every possible, variable, and conceivable instrument, all the while contending that this was the bridge over which all the travellers over the other bridges had first found their way to the temple, and if this should be destroyed, all the others would be deserted, and crumble into ruin. Onward they went, battering and still battering, encouraging each other, perfectly confident of success. For a long time no visible impression was made, but at length the battlements began to shake and tremble, many of the large stones cracked and tumbled down, and the bridge became so shattered that very many that would otherwise have passed over, dared not to set a foot upon it, for it was considered, by universal consent, dangerous. While the assailants vigorously and nobly pushed on their attack, reinforcements arrived from an unexpected quarter, and were greeted with loud shouts, indicative of ultimate victory.

The beautiful river, spanned by the seven bridges, and dividing the temple from the mount, was deep, and clear as crystal. Its ripples sparkled in the sun like countless diamonds. Its verdant banks were spangled with numberless flowers of every hue. Many of the trees, like the olive, were evergreen; others, towering high, mixed with the gentle breeze their odours sweet, and dropped upon its verge their luscious fruit. Extensive fields, clad with waving harvest, stretched far along the seemingly interminable shore. Cities, towns, hamlets, and cottages of peace and plenty spread far and wide. Schools, temples, domes, spires, pealing bells, and sacred songs, told that God was sought and minds were taught. No drunkeries, no policemen or bastilles were there. The whole scene, boundless as the vision, seemed indeed a land flowing with milk and honey.

The name of the country was Salem [*peace*],
The name of the river was Health.

While gazing on these truly happy plains, banners white as snow fluttered in the breeze, borne by the hands of a youthful army, 'midst softest music and sweetest song. The first banner bore the inscription, "The Hope of the Nation;" the second, "The Maine Law for England." As they came on in great numbers and admirable order, every countenance beamed with health and happiness. For a moment the millions on the mountain gazed on them in silence; onward still they came, and as they came they sang this song:—

We come from the banks of the health-giving river,
Where temperance spreads her mild rule o'er the plains;
We come! yes, we come! and we come to deliver
Our land from the bonds of intemperance chains.

Your sons and your daughters by millions have perish'd,
And the last ray of hope seems expiring in gloom:
For wrapp'd in the maze cruel customs have cherish'd,
Down rapids, deep rapids, they rush to their doom.

The tears of the good have dropped o'er their destruction,
And virtue in sorrow bends over the grave;
Still woe upon woe, and the direst affliction,
Roll over the myriads, and none come to save.

The pulpit is silent, or whispers its warning;
The college, too sage vulgar woes to attend;
The throne and the senate provide for destroying
The peace of the subject they vow to defend.

But hope brightly beams on the temperance horizon,
The beams of redemption illumine our shore;
The infamous dens of corruption and poison
In ruins shall perish, and ruin no more,

In God is our trust, for we war for salvation;
His presence shall shield us in battle's dread hour;
His word has proclaimed that every nation
Shall worship, adore, and acknowledge his power.

The song being ended, they formed their ranks in the shape of a crescent. A gentleman of fine intellectual mien, bold in countenance, stepped out into the midst, and addressed the multitude on the mountain as follows:—

"Sires and matrons, sons and daughters of England, ye ministers of peace, ye teachers of youth and guardians of morals, hear me. You behold yon Temple of Woe; two hundred and fifty thousand of such are scattered throughout our land, destroying more souls annually than all the home and foreign missionaries of the cross are instrumental in saving. One hundred thousand men are employed every Sabbath in preparing this liquor of death. Two hundred thousand are prevented attending the house of God, being engaged in the sale; and twenty hundred thousand every Sabbath day visit these temples. Protestant and pious Britain is annually spending half a million of money on the world's salvation, and sixty-five millions on body-and-soul-destroying strong drink. War, plague, and famine, with all their attendant horrors, do not destroy as many of the human race as this self-inflicted desolation. And if yon brilliant worlds, that move in harmony through God's illimitable universe, are but dust in the balance compared with the value of one immortal soul,

Think! oh think!—for language fails to tell—
The ruin of one soul that drops in hell!

Call us not enthusiasts. We read in the Word of Truth that drunkards shall not enter the kingdom of God, and yet how many thousands of drunkards are annually cut off in the midst of their debauchery, without a moment's warning! Ministers of Jesus, Sabbath-school teachers, men of Israel, help, for our hearts bleed at the bare contemplation of what is in actual operation. Ye venerable in Zion, you whom we have been taught to regard as Heaven's representatives on earth, we beseech you to tamper no longer with what you see is withering every prospect of your fellow-man, both for time and for eternity. Laugh not at our ardour and our earnestness; call not our projects Utopian. Medium, where ruin is pending, is madness.

"Britons and men of England in general, to you we also appeal. The law that makes these dens of infamy legal must be repealed. This monster blunder in legislation must be blotted out of our statute-book. Tell us not we are trenching on human liberty: liberty can never be given to one man for his own benefit and profit, to invade the peace and liberty of others; the keeper of the drunkery holds out every inducement to make his neighbour a madman and a pauper, and then in steps the law and compels us to support him. Is this liberty? Reason, justice, and religion are all on our side, and by your help, conquer we will."

When he had finished his speech there was great excitement upon the mountain. The hireling priests turned their backs with a snarl; the doctors and police exclaimed, "These proceedings will soon thin our numbers;" the lawyers and judges wagged their heads, declaring their craft was in danger; publicans and harlots ground their teeth in rage; but the noble, the generous, and the benevolent philanthropists made the valleys echo with their shouts of approval; amidst which, the youthful army, with flying banners, and singing their song, marched in the direction of the Little-drop bridge, which, by the assistance of those already engaged, they soon completely demolished.

After this, I saw the other six bridges gradually forsaken by travellers; the noise in the Temple ceased, the gloomy buildings behind began to tumble into ruins, the inhabitants of the beautiful plains on the banks of the river of health began to count by millions: and when in after years the aged pointed their children to the ruined bridges, temples, and gloomy buildings, they exclaimed, with hearts bounding with thankfulness, "It is the Lord's doing, and marvellous in our eyes." MELTON

THE FOLLY AND MISCHIEF OF USING PURGATIVE MEDICINES.

BY A MEMBER OF THE ROYAL COLLEGE OF SURGEONS.

OH dear, man's bowels! What a trouble his bowels are! What an oversight of omniscience to have made man in such a way that he cannot get through life without being plagued by his bowels! And that his palate, that apt appreciator of delicate flavour, should often be compelled most unwillingly to submit to be irritated and annoyed by disgusting compounds to regulate his bowels. Surely prescience and omniscience might have constructed man's frame that poor mortality could have passed through the world without the fearful probability of having life cut short unless he attend everlastingly to his bowels. Oh dear, man's bowels! What a bother his bowels are!

Such has probably been the reasoning of many an invalid who, taught by the therapeutics of the old school of medicine to irritate his stomach by nauseous drugs, finds, alas, to his disappointment, that his bowels, though drugged, are irregular still; and that the object in view when submitting to drug action is as far from being attained as before its application. What folly to go on then!

Still, if this unfortunate being can thoroughly believe the absurd and fast waning dogmas of medical teaching, he must be satisfied that he cannot more profitably employ either his money or his time than in daily attempts to regulate his bowels. Yet, so abominably capricious are those bowels, that if worked to-day by allopathic physic, it is a thousand to one that those obstinate and rebellious constituents of humanity will not wickedly, contumaciously, and as it were derisively, refuse to move on to-morrow, unless by having repeated a still stronger dose of some allopathic panacea for every ill—an aperient or purge. But it is a fact well known, that if we take from a practitioner of the old school of medicine, *his purges, his lancets, and health-murdering mercury, we take from his art the chief means on which he can rely;* for of specific medicine, in its limited or more extended meaning, the allopathic practitioner is contented to know nothing. Hence his anxiety to retain as long as possible every stronghold he possesses over people's credulity. If he doubt the necessity for improvement in his calling, let him read the following testimony to its want from the greatest and best of European surgeons, the late Sir Astley Cooper.

Lecturing to the students of Guy's Hospital, he said:—"The treatment of disease is founded on two principles, namely, diminishing inflammation and producing a change in the action of the part. But let me observe to you that no greater folly or cruelty can be committed than that of giving mercury to effect this end. It is lamentable to reflect on the number of lives that must have been destroyed by phthisis and otherwise, in consequence of the imprudent exhibition of mercury. Look, gentlemen, at 100 patients who come into the Hospital with syphilis, &c. What is the miserable treatment of these patients? You are aware that I scarcely ever enter those wards of the Hospital. I will tell you why I do not enter them. I abstain from entering them because patients are compelled to undergo so infamous a system of treatment, that I cannot bear to witness it. To compel an unfortunate patient to undergo a course of mercury for disease which does not require it, is a proceeding that reflects disgrace and dishonour on the character of a medical institution. No consideration shall induce me to repress my feelings; and I do say that the present treatment of patients is infamous and disgraceful, for their health, perhaps, is irremediably destroyed."

Yet this salivating process, which Sir Astley described with such feelings of horror, is still pursued by the medical profession. Is it not, then, time that patients should look to the subject for themselves, and force practitioners to adopt a better mode? Let them think for a moment, what has given to the world the philosophy of those sages whom society recognises as her greatest worthies but the inborn desire which those sages possessed of seeking to make human knowledge perfect, and then, as a consequence, *if mankind have the power or the wisdom to apply it*—human happiness greater.

The allopathic practitioner tries to persuade us that purgation is the condition that nature suggests, and has instituted to remove constipation. But it is not so. Further acquaintance with the subject will teach him that it is not. Nature is uniform in all her actions, and her laws are as unchangeable as those of the Medes. She never antidotes one condition of system to make by doing so that condition worse. If she do it at all, she does it to make it better. But purgation by drastic drugs, though it removes constipation for a time, invariably makes that costive condition more confirmed than before. Seeing this to be the case, the practitioners of homœopathy and hydropathy endeavour to show the people who have so long been misled by the malpractice of the mischievous old school, the evils that result from allopathic treatment, and the irrational basis on which it is founded. Foremost amongst these is the habit of giving drastic drugs to empty the bowels for every kind of ailment, and often for no ailment at all; but merely because the bowels are more confined than the faith of old physic imagines to be right.

Costiveness, it should be known, is not of itself a disease; but the result of an altered state, morbid or not, going on in the system. It accompanies diseases, and comes on in their progress, and may, or it may not, require medical interference. When it does require treatment, there are other indications to render it necessary. But that treatment does not consist in giving purgative medicines.

Purgatives, as is well known, have a specific action on particular parts of the intestinal channel. Thus, some act specially on the small intestines, while others expend the greater part of their power on the larger bowels. It is this specific action that often increases so much their injurious results. Let us hear the evidence of an eminent allopathic authority on the action of purgatives:—"One of our important steps has been to discover upon what particular portion of the intestinal canal, upon what tissues, and in what manner, each purgative medicine acts. It is not sufficient for us to know that the bowels are opened by one of these agents: we must be aware of the influence each produces. Thus magnesia, than which nothing is considered more simple, has been productive of fatal consequences from the ignorance with which it has been given. Masses of it, unchanged, have been found closely connected together in the bowels, or patches of the powder adhering with the utmost pertinacity to the coats of the intestines. After taking manna, particularly if much vegetable food has been eaten, dyspepsia of a most aggravated character is apt to occur, more especially in children; the quantity of flatulence produced has been a fearful evil, and the consequences alarming. Castor oil, if given under improper circumstances, will not only occasion excruciating tormina, but will be the cause of the expulsion of the mucus which lubricates and defends the bowels from injury. Many individuals have had to repent the folly of taking the different neutral salts. Diarrhœas, dysentery, and dropsy, have supervened upon their use. Gamboge is, of all others, the most uncertain, and oftentimes the most pernicious. Its influence is principally exerted on the muscular fibre, and it is a most energetic engine of mischief. It has been known to produce intussusception, and in some of those instances that have come before the public of death produced by the violent action of pills on the intestinal canal, this drug has decidedly been the means employed. The good sense of the public has taught it to give up the constant employment of aloes, once the basis of every aperient pill, and gamboge, which is infinitely more pernicious, has been substituted; but of the two evils, the hœmorrhoids produced by aloes are infinitely preferable to the disease, and even to the death, consequent on the use of the other. Even senna, which certainly comes nearer to a harmless domestic remedy than any other, is not so if given alone. It is not only a momentary cause of griping and of inconvenience, but it leaves behind it a very great tendency to those uncomfortable sensations, and more particularly if the liver has not been previously called into some slightly increased action. Indeed, a catalogue of sorrows occasioned by the indiscriminate and foolish use of purgatives might easily be drawn up; but such is the headstrong tendency of some individuals to doctor themselves, that it would be rather a curious than a useful task to undertake it."—*Sigmond on Materia Medica.*

Such is the testimony to the value of his own system of treatment of an eminent allopathic physician—for bear in mind that without purgatives, and without mercury, an allopathic practitioner is as powerless as a child.

That we may fully comprehend the tendency of the mischievous habit of taking purgative medicine, it will be well to take a brief survey of the anatomy and function of the digestive apparatus. We shall then see more clearly how such a habit interferes with the process of nutrition, the very function on which health and strength so pre-eminently depend.

All animal bodies, being liable to waste, must have their substance renewed by the digestion and conversion into nourishment of extraneous substances that contain the elements of which such animal bodies are composed. So long as this renewal of substance goes on, and is unimpaired by the imbibition of deleterious substance, the body remains in health. But stop it, or divert it, and the body loses strength, and ultimately dies. So important is nutrition, that nature's greatest efforts have been directed to maintain it. With a prescience beyond our power of comprehension, she has provided an apparatus so admirably suited to the end desired, that one is lost in astonishment at the foresight of Him who could so admirably design it.

The entire length of the human digestive apparatus and bowels is from five to six times the length of the body. Thus an individual whose height is six feet, would have an intestinal channel of some thirty feet in length. This is an important fact in connection with its function; for it is impossible to conceive that nature, fond of simplicity in all her works, would have formed such a lengthy and complicated apparatus, if the entire evacuation of its contents were to be so often required. If frequent evacuation had been part of her plan for the preservation of the economy, it is believed she would have made a shorter and more simple apparatus.

To prepare the food for the process of digestion, nature has supplied the mouth with teeth, and added very powerful muscles to the jaws to enable the teeth to act. As an inducement to prolong the action of the teeth upon the food, and so prepare it better for the next part of the process of digestion, she has abundantly supplied the *tongue* with nerves. These nerves are so sensitive to impressions, and so rapid in their agency to convey impressions to the *brain*, that man is tempted to continue the action of the teeth on the food, in order to prolong the enjoyment of the sensations produced on the tongue and palate. Thus nature holds out to man an inducement to commence the nutrition of his system rightly.

The masticated food having passed into the stomach, undergoes there the process of maceration. The stomach detains it for a variable period, generally of some hours' duration, till having become pulpified by the united action of moisture and of heat, it passes on to the duodenum, or first part of the intestines, where, being blended with the bile from the liver, the mass is totally changed in its nature and its uses, and has a portion of its substance fit to be received into the circulating medium.

For anatomical purposes the intestines are divided into two parts called the large and the small intestines. The small intestines have their origin from the right or pyloric end of the stomach, and, after making numerous convolutions, end at last at the commencement of the large bowels, which for our present purpose it will be sufficiently accurate to say begin immediately above the right groin. From this part of the abdomen the large intestines pass upwards to the ribs, thence in a curvilinear direction across the body and downwards on the left side of the back-bone to their termination.

The digested food having passed from the stomach to the small intestines, the mass is continued slowly onward by a kind of undulating action of the bowels. Here it is worthy of remark, for it gives immense weight to the opinion broached, that nature has provided most efficient means in the inside of the intestines to *prevent* the frequent evacuation of their contents. These means consist of broad folds of membrane stretching from the circumference to the centre of the bowels like valves or ridges, with the evident object of impeding the passage of the intestinal contents. Is it possible nature would have placed those ridges there, if frequent evacuation had been part of her design? No. It would be just as sensible to clear the course for a race, and then with wagons to barricade it across. Moreover, these valves or ridges, as they are called, are thickly studded with small absorbent vessels, the function of which is to extract from the digested food every particle of nourishment the food contains. But how should they do that, if the food have to pass at a rattling gallop over their closed extremities? Yet allopathic practitioners give purgatives expressly to expel this food. Nature says plainly, "Let it remain." They, on the contrary, put nature at defiance and eject it all. Nature exclaims to them, "Nourish the body." Their cry is "Reduce it; cut off the supplies; starve, weaken, and exhaust it." They do this, and call themselves *men of science!* They don't assert the alternative that then nature must be a fool. But one or other *must* be wrong. Let the reader and common sense decide whether it be nature or the doctors.

As the digested food passes slowly along the alimentary canal, it is exposed to the action of innumerable vessels. These vessels, extracting a milk-like fluid from the digested mass, are named from this function lacteals, and, uniting afterwards into a common trunk, pass along the inner surface of the spine to the upper part of the chest. This trunk, or thoracic duct, as it is called, empties itself into the left subclavian vein, a little behind and below the collar bone. Mixing itself with the blood, the conveyed fluid passes on to the *right* side of the heart, the heart being a double organ. From the right side of the heart it is sent to the lungs, to undergo the process of conversion into purified blood. Returning from the lungs to the *left* side of the heart, the fluid which we have just seen obtained from the digested food in the intestines has become healthy blood, and is fit for distribution over, and for the nourishment of the body.

Talk of the perfectibility of machinery, and its adaptability to human wants!—why, the mightiest efforts of man's constructive skill sink to the very zero of insignificant nothingness, when compared to this series of acts of prescient thought for the nourishment of the body. Let any rational being, too, ask himself the question if a process like this is to be rashly interfered with by the exhibition of purgatives. Nature has used every possible means to make the processes of digestion and nutrition gradual and sure. Yet medical men and empirics thoughtlessly give highly irritating drugs, which put a stop by their action to the very process that nature has taken so much pains to perfect, and to insure which she has given man an apparatus most wonderful in construction, and beautifully adapted to the function assigned it.

Those who know anything of medical literature know that there was no more devoted enthusiast to the doctrine of cerebral inflammation as the cause of fever and insanity than the late Dr. Clutterbuck. Every one also knows that no allopathic practitioner could undertake the treatment of fever with the slightest chance of success, if deprived of the use of purgative medicines. It may not, therefore, be amiss to see what the extensive experience of Dr. Clutterbuck taught him was the frequent result of the exhibition of purgatives. He says:—"The object in acting upon the intestinal canal, or as we call it producing purging, is the supposition that something noxious is to be carried off, upon the retention of which disease depends. This notion appears to have been entertained in all ages; and accordingly no class of remedies has been in such constant use as that of purgatives. At the present day the *stools* are scrutinised with a degree of minuteness that is quite ridiculous, as if the whole *ars medendi* were confined to the night-stool. Now, nine times in ten, the changes observed in the alvine discharges are the *effect* and not the *cause* of the disease. *On many occasions the changes observed in the state of the evacuations are the result of the very means employed to produce them*, and thus lead to improper practice. I might instance this in the case of children, in the healthiest of whom the doses of *calomel* and *scammony* ordinarily prescribed will at any time produce the most unnatural and offensive discharges; the appearance of which again is thought a sufficient reason for a repetition of medicine; till at length actual and often irremediable disease is excited in the intestinal canal, if not throughout the whole cavity." Such is the testimony of a leading member of the allopathic sect.

The testimony of Mr. Colles, of Dublin, is also worth recording. He observes:—"I recollect when Dr. Hamilton's book came out that it was expected every disease would be cured by purgatives, and they were tried in tetanus; but I always found that the patients died sooner under that plan of treatment than they otherwise would if it had not been employed at all."—*Lecture on Tetanus, at the Royal College of Surgeons, in Ireland.*

Those who have seen much of insanity know well that prolonged constipation is not an unfrequent result of some of those states of brain on which insanity depends. But it is also known that repeated purging acts unfavourably on the insane. The truth is that constipation is not itself a disease; it is the manifested effect of a deviation from the ordinary standard of health; and he is the better man of science, the more true philosopher, who detects and counteracts the deviation, if morbid. To say that constipation is a disease is like saying that the rotations of a wheel are the motive power of a steam-engine; but take away the steam that drives it, and the wheel ceases to perform its function; so it is with constipation—remove the condition on which constipation depends, and you will not require purgatives to remove constipation.

VENTILATION OF BED-ROOMS.—Too much importance cannot be attached to the ventilation of both day and night rooms, but more especially the latter. In our experience of disease, we see a very fruitful cause of the commencement of disease in confined bed-rooms, and have often had our efforts in the day counteracted by the unhealthy influence of a badly-ventilated room in the night. If one or two persons were shut up for nine hours in the day in the room they occupy in the night, and under the same circumstances of closed windows and door, and notmoving out of the room, they would find it almost insupportable; nevertheless, asleep, they endure this every night, breathing the same vitiated air as if shut up in the day. No one can calculate the amount of disease and death from this cause; and it is the case in many first-class houses, as well as in cottages, although in the latter in a greater degree. In first-class houses there is seldom provision made for ventilating the upper part of the room near the ceiling; and as to the grates in the chimney, high up, called ventilators, they do not carry away half the quantity of bad air accumulated, besides often not acting at all: because, unless there is a difference—and that pretty considerable—betwixt the inner and the outer atmosphere, there will be no draught; for as water finds its level, so will air. Finely-perforated zinc, about four inches wide, at the top of each room, is good, and makes provision—by means according to circumstances—to carry off the air in the top of the room. The fireplace will not do it. As to cottages where the bed-rooms are next the roof, take off several ridge tiles, and lay every alternate one over the other; or cover with a wooden tile, standing a few inches above the roof, and cover the opening over with perforated zinc inside, or any contrivance to get air. There is a totally unfounded prejudice against letting night air into bed-rooms. Even delicate persons would be surprised what air they could bear, when in bed, not only without injury, but with very great benefit. Thousands have their health ruined, or die of disease, by breathing bad air in confined bed-rooms, without being aware of the cause.

MUSTARD for foot-baths, &c., may be had at any mustard mill, at 8s. or 9s. per cwt.; or free at Lea Mills, by working people. This mustard bran is stronger than best mustard.

METHILATED SPIRITS OF WINE for baths, and sweating, may be bought at 4s. 6d. per gallon, of the chemist; 60 over proof does not give out any effluvia, and may be used also in Etnas, to heat tea or cocoa for invalids. Rectified naptha will also act.

HOME-MADE YEAST.—One pound of malt, one ounce of hops, boiled in six quarts of water two hours; strain it, and, when nearly cold, add a half pint of the yeast from last making, mixed with a table-spoonful of flour and one ounce of salt. The yeast, put in a cool place, will keep good six weeks at least in stone bottles closely corked and tied. Some public-house yeast may be used for the first; afterwards save some to make a fresh quantity with.

PUDDING very nourishing and light. Duryea's Maizena; to be had at the grocers'. Eight quarts of milk to one pound of maize. Put seven quarts of the milk over the fire; boil with two or three laurel leaves in, to flavour; mix the maize with the remaining quart of cold milk in a separate basin; add a little salt, one pound and a half of powdered lump sugar, half an ounce of butter, and eight eggs. When the milk boils, put in the other quart of mixture, and when thoroughly mixed, pour into moulds, and in half an hour it will be set, and ready for use.

BEEF-STEAKS OR CUTLETS.—The only way to have them tender: Put the meat in a tin pan, and put in water just to cover them. Put in a slow oven for four hours; then add flavouring, if desired, to the gravy.

DU BARRY'S REVELENTA.—One ounce to a pint of milk, or milk and water, flavoured with refined sugar or salt, is exceedingly nutritious, and will agree with the stomach when nothing else will. May be had of the grocer or druggist; the second quality best. 12lb. canister, 22s.

A VERY REFRESHING COOLING DRINK FOR CONSUMPTIVE OR FEVERISH CASES.—To one tea-spoonful of citric acid, two of cream of tartar, and the juice of half a lemon, and a quart of cold water, and sweeten according to the palate with lump sugar. If lemon cannot be procured, a little more citric acid, and the juice of an orange.

NEW MILK JELLY FOR CONSUMPTIVE OR DELICATE PERSONS.—Bake two calf's feet in two pints of water, and the same quantity of new milk, in a jar closely covered, for three hours and a half; a bit of lemon peel baked in it gives a nice flavour. Add a little sugar, if required, before it goes cold, and when cold remove any fat from the top. If there be no calf's feet to be procured, half a packet of gelatine, to be had at the druggists, will answer as well. *The patient should take it cold.*

STEWED APPLES AND PEARS are a very wholesome and valuable article of diet. The way we prepare them is as follows:—Pare the apples or pears; do not slice them, but put them whole into an earthen jar, with a little cold water, and sprinkle some crushed sugar over them; cover up, and let them stew gently for an hour or so, taking care the water does not boil, or become hot enough to reduce the fruit to a pulp. This requires watching.

FIGS are very wholesome, as follows:—Get the extra Elema figs; put a few in basin or jar; pour boiling water over them; stand three or four minutes; drain water off; sprinkle little crushed lump sugar over.

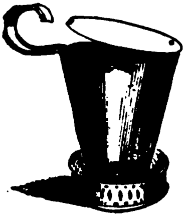
APRICOTS AND PEACHES, dried.—Take a handful, wash them in two waters to take away sand and straw; put them in a saucepan; just cover them with water; stew an hour. No sugar. The water will have become good syrup.

PLUMS, best picked French.—Stew in a jar until soft. Very excellent for invalids.

GINGER, preserved Chinese, put through sausage machine, softens and mellows it. Very good, instead of butter, for some invalids.

POMADE FOR THE HAIR.—2 ounces olive oil; 1 ounce castor oil; 5 drams spermaceti. Melt the above together, and when cool add as under—5 drops oil of cloves; 6 ditto almonds; 20 drops essence of lemon.

ARROWROOT PUDDING.—6½ oz. arrowroot; 2½ oz. sugar; 3 pints new milk; 2 eggs. Set milk on the fire, mix the arrowroot in some of the cold milk, and when milk boils put in the arrowroot, and let it boil only 3 minutes; take off, and when cooled down a little under boiling heat, add the eggs and sugar, then put in pudding-dish, and bake in quick oven 5 minutes. MAIZENA MOULDS—8 oz corn-flour; 6 oz. sugar; 4 pints new milk; 5 eggs. Let milk boil, mix corn-flour in cold milk, then put it into the boiling milk, stirring it; then take off fire, cool it 8 minutes, then put in eggs and sugar; stir well, and boil the whole 20 minutes, then pour into moulds, and stand till cold.



½ in. whole height.
5½ wide in top.
4 in bottom of stand.
To hold a quart.

Etna, for heating cocoa or tea, very useful. On rising, put a full dessert-spoonful of rectified spirit of naphtha—or what is better, methylated spirits of wine—into the channel round the bottom of the can; set it on fire with a match, having previously put into the can the liquid to be heated. Cocoa stewed from nibs is best; never buy ground cocoa of any kind. Heat them in the oven an hour or two, then stew them in water three or four hours; as much may be done as will last two or three days. The methylated spirits of wine is about 4s. per gallon, and is best in a half-pint glass bottle.

Turkish Bath.—Our several years experience of Turkish baths has proved to us that it is not so safe to use as our No. 59 bath list spirit lamp, in by far the majority of cases, and we have been compelled to use it very limitedly in cases of invalids. The spirit lamp we can use freely in many cases, the Turkish bath would only do mischief; as while the spirit lamp is given, fresh air can be breathed, bringing oxygen into the blood and sustaining vital energy. For asthma, bronchial attacks, and skin diseases, we have found the modified Turkish bath as below, very beneficial, but we have had not a few patients who have been greatly injured by taking Turkish baths for their general health previous to coming here. In many cases it is highly hazardous, and taken too late. This is found out by persons in their usual health feeling the bath a luxury.

Turkish or Sweating Baths.—We have one for ladies, one for gentlemen. In each three rooms, ten feet square, ten feet high. First room, for sponging after sweating; window, one-half to swing, to admit air freely; floor covered with zinc, returned up sides one foot; on this, wood laths, to allow water to go off freely. Second room, divided into six partitions—three each side for dressing, with clean calico aprons for bathers. Third room—zinc flooring with laths, as in first room; seated round three sides; round three sides of the room 330 feet of three-inch bore steam-pipe, put upright against the wall, boarded next the seat. Best to lay down on a blanket, and thick cotton sheet over it; the head supported on a frame covered with web; clean sheet for every bather; cold air-flue under seat; good ventilation in ceiling; window two feet square, closed, double glazed; cold water to sponge head and to wet head bandages; door half glass, for bath attendant to watch bathers, to supply wants, cold drinking water, &c. After sweating in from 120 to 140 degrees, frequently sponging head with cold. Before coming out, sponging over with hot soap and water, then bather comes into first room—there is first sponged with hot water, then with cold; some cases tepid; is rubbed dry in the dressing-room, retires to the saloons, uses 77 on list.

The Turkish Bath is coming much into use in England and Ireland; but from the very powerful effects which can be produced by it, and the inconsiderate manner in which it is often used, there will be many permanently injured by its use. It is entirely opposed to all sound principles of knowledge of the functions of the human frame to suppose individuals with such differences of constitution and temperament can alike, and with safety, go into a room heated to 140 or 180 degrees. Several deaths have been recorded from the use of this bath, and I know several who have been seriously injured by the repeated use of such high temperature. Our sweating bath, a modification of the Turkish bath, we find extremely beneficial in chronic rheumatism, in skin diseases, and in a morbid state of the system, and especially in modifying crisis cases and hastening the cure, but we do not use the high temperature, nor allow the patient to remain in longer than is necessary for a good perspiration, and after, instead of allowing the body to remain relaxed in the cooling room, we use our cold or tepid sponging sitz bath or shallow; the patient dresses, and gets out into the air, to brace the system up again by breathing the oxygen of the open air. It is impossible a person can go into a high temperature in a room without some degree of pressure on the brain; and there the blood-vessels have not room to expand as in other parts of the body; the consequence of pressure continued is a relaxed muscular nervous power of the blood-vessels, and this state of relaxation is further prolonged by the person in the ordinary Turkish bath remaining in the hot room or in other rooms in the building for such a considerable time without fresh air. The head should be sponged with cold water, and cold water taken by dips while in the bath, and good hot soaping while in hot room. We heat the room by steam pipes, and bring cold air in instead of heated air from flues, which makes a totally different state of atmosphere from the oppressive sulphurous air in most Turkish baths.

DURATION OF LIFE IN EUROPE.—The *Clinique Européenne,* published by Dr. Kraus, in an article on this important subject, states that before 1789 Duvillard calculated that out of 100 individuals 50 only reached the age of 20. From 1823 to 1831, according to Blennyme's observations, the proportion was 60 per cent. According to Demonferrand, 7 individuals out of 100 reach the age of 80, 2 only the age of 85, and 1 that of 89; while out of a million only 640 die within 90 and 99. Mathieu reduces the 640 to 491, and finds that out of that number only 9 reach the age of 97, and only 4 that of 99. According to Duvillard and Demonferrand, only 2 out of 10,000 reach the age of 100; but in this respect there are some privileged places: thus, at Carlisle, in Cumberland, 9 out of 10,000 attain that age; while at Paris, scarcely a year passes without some person dying 100 years old, or upwards. Benoiston de Chateauneuf, calculating upon 15 millions of individuals, finds that out of a hundred only 44 reach the age of 30; 23 that of 60; 15 that of 70; 4½ that of 80; and eleven-sixteenths that of 90. The average duration of life is now about 39 years and 8 months; 20 years ago it was only 36; in 1817 it did not exceed 31¼; before 1789 it was only 28¾; and M. Villerme shows that at Paris in the 14th century, it was not more than 17 years; in the 17th century, 26; and the 18th, 32. In France there is only 1 septuagenarian for 33 individuals, 1 octogenarian in 160, and 1 nonogenarian in 1,900. At Geneva, the average of human life in the 16th century was 18 years and 5 months; in the 17th, 23 years and 4 months; and from 1815 to 1826 it was 38 years and 10 months. In England, the average in 1840 was 38 years; in France, 36½; at Hanover, 35 and 4 months; in Schleswig Holstein, 34 years and 7 months; in Holland, 34 years; at Naples, 34 years and 7 months; in Prussia, 30 years and 10 months; in Wurtemberg, 30 years; in Saxony, 29 years. These facts show the average duration of life in Europe as constantly increasing.

SODA WATER MACHINE BOTTLE.—This machine bottle, called Gazogene, may be purchased of Simpson, 315, Oxford Street, London; one quart, a guinea; two quarts, two guineas; and with a powder purchased at any chemist's, soda water, or lemonade, or ginger beer may be produced for about twopence per quart, to keep any time, and drawn off as required; powders sent with the machine.

ICE machines, for making ice in ten or fifteen minutes, with powder at a trifling expense, to be had at the same place.

TESTIMONIALS.

The following letters I have frequently brought before desponding patients for their encouragement. Both these cases came to our establishment in a state of bodily and mental depression distressing to witness; their friends only prospect for them the lunatic asylum, as all medical means had been tried in vain for their restoration:—

Regent-street, L——, March 6, 1860.

My dear Sir,—On leaving your establishment, Matlock Bank, about the close of December last, I believe I promised to write you to say how I was going on.

I am persuaded that you will agree with me in admitting, that for all blessings received and enjoyed, our *first thanks* are due to the "Father of lights," from whom cometh down "every good gift and every perfect gift." But, next to this, I feel that it becomes me to say that I have inexpressible cause to be thankful that I was influenced to spend six weeks at your Hydropathic Home. For about two years previous to that visit, this life, both within and without me, was one unrelieved, distressing, miserable blank; to me, devoid of either comfort, or hope, or joy. But, blessed be God, how different, gloriously different, when, at the close of six weeks, I left Matlock Bank! My residence there was just the thing for my case.

At Matlock, in connection with the "Water Treatment," I met with that mental repose, cheerful society, exercise, diversion of the mind, and kind, encouraging treatment from others which I so much needed; and, by the blessing of God on the means used, I came home, as they here told me, a *new man.* My mental and nervous vigour seem to have been quite renewed, and the entire tone and action of the system appears to be better than it has been for the last fifteen or twenty years. Without speaking in the spirit of vain boasting. I believe I may say in truth, that I can both study and preach with greater facility and ease than I ever could in my life before; and yet I had given up all for lost. How good the Lord is!

Since my arrival home, I have continued especially the head-baths, with the body bandages, with much rubbing of cold water behind the ears. It is great cause of further thankfulness, that within the last two months my hearing, which you will remember was very defective, *has greatly improved.* I can now, without particular effort, hear sounds and conversations which I have been deprived of for some years. I continue still to use the baths, and my general health and hearing seem still to keep improving. Well, while we are thankful for human means, we must *give God all praise and glory.*

Permit me, before I close, to express my satisfaction, and pleasure, and profit in the family and religious services which are held in your establishment. They seem specially valuable and dear to me, no doubt, because it was in connection with them that I began to feel relief from that "horror of great spiritual darkness" that had so long oppressed me. It was then that, in singing and prayer, and reading the holy Word of God. I began to feel the spring and return of those inward spiritual consolations and joys that convinced me God had not forsaken me, and that life was still an invaluable blessing, and particularly so as a preparatory course for a higher and a better state.

I was pleased with the generally apparent attentive and sincere interest which the patients took in the worship of God.

I have no doubt you will pay kind attention to Mr. John Bull, who is now with you. His father is a dear and faithful friend of mine. Both for John's sake and his father's, I hope in God that he may soon be well. I was sorry to hear that he had gone off to Derby. Give my love to him; tell him that I say he must stick to his baths, and try to be content, and ask God's blessing in prayer, and I have no doubt he will get well. I shall perhaps write to him.

I cannot tell upon what terms you admit patients into your Free Hospital at Lea Mills. We have at Wetton, in this circuit, a local preacher, *who is poor, but a good man*, who has been afflicted with something of rheumatism and weakness in the loins for some time, which unfits him for work. If you could do anything for him, it would be a favour worthily bestowed. He wished me to inquire. He told me that he had written to you some time back, but had received no reply. His name is Lownds. Mr. John Bull knows him.

Please to present my Christian regards to Mrs. Earle and Mr. Preston, and t any of the patients who were there wh I left. I am, my dear Sir,

Very truly yours,
S—— B——.

J. Smedley, Esq.

N——— Road, B——,
April 12, 1860.

Dear Sir,—I have great pleasure in presenting my sincere and heartfelt gratitude to you for the extreme kindness shown to me during my stay at Matlock Bank, and think that I shall ever be indebted to you for it.

I feel quite assured, from the deep interest you took in my welfare, that you will be glad to know that my health is very much improving, and that I am experiencing the truthfulness of your kind remarks to me from time to time. They were as follows:—That I should in future life, in all probability, be better in health than I had been for years past. I may say that such is the case, and that in consequence of your very excellent treatment under the Hydropathic system, and the blessing of God resting thereon, I feel there is a basis of future health laid that I have not felt for years past; and I do hope that you will accept of my most sincere thanks, which I feel in duty bound to present to you.

I have many pleasing recollections of your instructive and very telling remarks at various times, and of the very delightful influences I experienced at the reading of the sacred Scriptures, and the gathering of the family circle night and morning, which I doubt not will have their effect for good the long round of eternity, which I pray from my heart may be the result, and that, in the eternal world of joy, you may receive the reward of a crown of glory that fadeth not away, and find many, which I doubt not you will, of those who, through your instrumentality, have been led to a saving knowledge of the truth as it is in Jesus.

Hoping you will excuse the liberty I have taken, allow me to remain,

Yours sincerely, dear Sir,
J—— B——.

To J. Smedley, Esq., Matlock Bank.

WINTER LIFE IN AN ENGLISH WATER CURE ESTABLISHMENT.

(*Extracted from the Water Cure Journal, by R. T. Trall, M.D., New York, January*, 1863.)

Is there any sensation of physical comfort equal to that experienced on a cold winter's morning, when you become again conscious of existence an hour or so before it is time to rise? What a perfect paradise of ease and pleasure bed is on such occasions! What a dreamy, delightful feeling you have, as if all the world were going well with you; a calm, unruffled state of mind, unlike anything else you ever experience. No matter how uneasy and restless a being you may be during the remainder of the day, a spell is over you then, and you lie quite quiet, while, one after another, dreamy phantoms of pleasure or beauty float through your mind. Now, if you wish for a frequent recurrence of these delightful sensations, go to the hydropathic establishment at Matlock Bank. It is a proverbial fact that patients there always wake early; and, as you cannot get up until your attendant comes, you may lie in perfect comfort, only the scramble at last to be ready for breakfast forms a sad contrast. The bell announces that social meal at half-past eight, and if you are not in time to hear "grace" you are "boxed," that is, the butler sets down on the table before you—always taking care to give it a good rattle—a pretty little wooden box in the form of a book, entitled, "Bible and Temperance Societies," into which you have to slip a penny. Now, very likely it may be your attendant's fault, but as the use, at meal-times, of all words relative to the curative processes of the establishment is also a finable offence, it is generally wisest not to enter into an explanation.

Would you like to glance at a few of the company around that long, pleasant breakfast-table? They don't look very ill, and certainly their merry, kindly "good mornings" do not sound as if they were. The lady who presides at the top row is Miss S., a bright, laughing girl, whose floating curls and beautiful, gladsome face are quite enough to prevent any gentleman from complaining of his tea, however weak it may be. To her left sits kind old Captain P., now the veteran of the establishment (he has been there seven months), and who always knows what sort of weather the day will produce; next, Mr. F., a grave looking gentleman, but with much quiet fun about him; next, the somewhat majestic form of Miss C., a Scotch lady, whose slightly haughty manner hides a heart all kindness, as her quiet, unostentatious attentions to Mr. R., the blind gentleman who sits by her, plainly show. His is a face that, once seen, is not easily forgotten — not handsome, but open and manly, and bearing on it fewer traces of his affliction than is usual with blind persons. Nor must we forget Mr. W., whose kindly, witty sayings give so much pleasure to all, and his daughter, Miss W., who is playfully and lovingly called Florence Nightingale, from her unremitting attentions to all who require them; and Mr. J., an Independent minister, from whose thoughtful and earnest countenance you would little suspect the hearty and genial appreciation of merriment that lies underneath; nor Mr. M., a kind, fatherly member of the Society of Friends, and his bright, sunny daughter. These, and about thirty others, composed the circle at Matlock Bank at the time of our visit, and a more kindly, agreeable party you might go far without meeting. Sojourning there awhile is like enjoying the pleasure of a social evening party, lasting over days and weeks, without any of the stiffness consequent upon sitting around a room in prim order.

After breakfast and prayers, some one calls out, "Oh, there is Mr. P. with the letter-bag!" All flock to a table at the end of the long saloons where its welcome contents are distributed. Oh, the anxious, expectant faces that cluster around that table! It is a pleasant thing to receive letter, of friendship, and especially so when you are, as it were, in a measure, shut out from the rest of the world. Miss S. has one from a gentleman who has just left, and she favours a group in one of the recesses with a perusal; and it is curious to note how he feels in again entering into the great world.

Very various are the employments of the morning. Some visit the invalids up-stairs; some repose luxuriantly on the sofas which surround the saloon; others prefer those in the verandah, as from thence they have a grand view of the bold abrupt hills rising from the opposite side of the valley. But, as it is not consulting day, and the sun is now shining forth in all his glory, most sally out, either on foot, on donkeys, or in carriages, to enjoy the surrounding country—and, indeed, it is worth viewing. Never in our life did we witness so much natural beauty in winter time. The intensely green fields, the dark foliage among the clefts of the grey rocks, the hills, which, as you ride along the Darley Road, seem to rise up before you one after another, the picturesque moss-covered cottages, bearing upon their roofs and walls the richest varieties and combinations of green, amber, and brown; the quiet, green, mossy-sided lanes, with here and there a beautiful little spring gushing out on either side, and across which the tall, leafless trees cast their beautiful grey shadows—all these are among the delights that meet you in the shortest strolls, to say nothing of the authentic and well-known beauties and wonders of the Peak.

We meet again for dinner at half-past one, and recount the adventures and experiences of the morning. Those gentlemen who have spent an hour in the library, of course, tell us whether there is any fresh news from India, the state of the money market, &c.; and we listen to all these things as very interesting, but not as having the remotest connection with anything in our little world, any more than if they were about the Otaheitans or New Zealanders. There is a vacant chair near the top of the table, and presently Mr. J. walks up, and has no sooner taken his seat than the box is energetically bounced down before him.

Mr. F.: "I shall not pay to-day."

Mr. R.: "Why not? It is a clear box case. Why, you are ten minutes behind time; and I am sure that is a good pennyworth!"

Mr. J.: "I was left asleep under peculiar circumstances, and therefore I have had no possible control over the matter." (He was asleep in a pack.)

Soon the proprietor of the establishment, Mr. S., who, with his wife, dines there to-day, gives a long dissertation on the "abominable practice of smoking." Most of the gentlemen join in the conversation on the subject; and it is curious to remark the various ingenious little sentences which they contrive to slip in in exculpation of the captivating habit. Mr. Z., a German gentleman, quietly remarked, "It makes a *great* difference what *kind* of tobacco you smoke." Mrs. S. edified our end of the table with an account of a poor Irishman in their free hospital, who was one day taken in the act. He had imagined himself quite secure, having inserted his head in a bush, forgetting that the smoke of his beloved pipe would have an upward, expanding tendency.

After dinner the secretary reads a chapter in the Bible; and then the twenty minutes' law prevails—that is, you may not exert your mental faculties in any way during that space of time: neither read, write, nor work; so there is nothing left but to sit and chat, and look at one another. The spirit of this law is, however, sometimes evaded; for instance, Miss W. has been known to occupy the time in teaching poetry to Mr. R., the blind gentleman.

There are several snug recesses, each fitted up with two or three sofas, and, you may be sure, many cosy parties for reading and working are formed in them. Those in the verandah are especially pleasant, as you can lie and watch the setting sun sinking behind the hills among the golden clouds. Toward the end of the afternoon the piano is in great requisition, though, as only sacred tunes are allowed to be played, the choice is rather limited, unless you take the view of Mr. Z., the German, who is quite an amateur, and who, upon being informed of the rule, replied, in his quiet, slow way, "All music is sacred!"

At a quarter to five the letters go, and tea, or the evening meal, as it is termed, is on the table punctually at six, when again a kindly interchange of talk takes place.

"Mrs. B.," says Mr. C., "what do you think my little girl asked me to-day?—'Papa, is it part of the creed of the Quakers always to hold their bread-and-butter in their left hands? for I have noticed that all those who are here do it.'"

A merry laugh resounds at the expense of the "Society," though, of course, *we* repudiate the accusation; and the laugh is soon after turned against Mr. C. himself, who, in support of an argument, is led unwittingly to assert that golden syrup is not a liquid, upon which Miss N. inquires, "Is it a gas, then, Mr. C.?"

The evening is passed very similarly to the afternoon, only that the more volatile ones sometimes have a game of "post" in the verandah, and their ringing laughter forms an interesting though not very edifying chorus to any grave reading that may be going on in the recesses.

Evening prayers take place about a quarter to nine, and you are obliged to go to bed at ten. This is the only disagreeable feature in the regulations of the establishment; there is something decidedly antagonistic to your feelings as Englishmen in being sent off *nolens volens* just like a child; and it is all the worse from its great contrast to your perfect freedom during the rest of the day. A few minutes before ten you are sure to hear the secretary's boots beginning to creak about the apartment; and, no matter what important subject you are discussing, or how near you may be to the end of a chapter, just as the clock strikes he is sure to walk up to you with—

"Ladies and gentlemen, it is ten o'clock; I shall be much obliged to you to go to bed."

"Well, but," remonstrates Miss M., "won't you let us stay a little longer to-night? We only just want to finish this life of Ximenes." And Mr. J., the reader, after a moment's pause, goes on again.

Mr. P.: "The rule is not of my making, and I cannot alter it."

Miss M.: "It is a bad rule, I am sure."

Miss N.: "Don't you think, Mr. P., that it must grievously retard the cures effected here? for nothing is so bad for people, when they are not well, as having their inclinations crossed"

"Yes," chimes in Miss W.; "and, looking at it in a *moral* point of view, just think of the harm it must do us to be sent to bed every night in a bad humour."

Mr. P.: "I cannot help it!" By this time all the other lights are out, and Charles, the night watchman, is just coming to extinguish yours also.

So, at last, you are forced to yield, night after night. True, you can come down again after Mr. P. has left, and enjoy a delightful chat by the fire in the gentlemen's room, which, according to theory, is all the sweeter for being a forbidden pleasure; but, to our mind, the sort of culprit feeling which makes you hear boots in the step of a mouse is anything but agreeable; besides, it would cost Charles his place were it known that he did not report you, therefore it is best to remain in the higher regions; and, if you cannot sleep, you may lie awake and listen to the creaking of the steam-pipes by which the house is warmed, and all the other singular noises with which night is prolific. B. P.,

of Birmingham, England.

RAILWAY BRIDGE, MATLOCK BANK IN THE DISTANCE.

DIVISION VI.

EXTRACTS AND CUTS FROM THE BEST AND MOST MODERN WORKS ON PHYSIOLOGY.

DISEASE. *Morbus.* Any deviation from the natural and healthyactions of the whole system or any particular organ. Diseases may be:—*Local.* Affecting some particular part.—*Constitutional.* Affecting the whole system.—*Specific.* Marked by some disordered vital action, not common to diseases in general, but peculiar to the individual disease.—*Idiopathic.* Primary, and not dependent on any other disease.—*Symptomatic,* or *Sympathetic.* Dependent on and accompanying some other disease.—*Periodical.* Recurring at fixed periods.—*Acute.* Severe and of short continuance.—*Chronic.* Of long continuance.—*Sporadic.* Arising from adventitious causes affecting the individual.—*Epidemic.* Generally diffused among a population, and arising either from contagion, or some atmospheric or other cause, the influence of which is extensively felt.—*Endemic.* Peculiar to, or especially prevalent in, a certain region.—*Intercurrent.* Sporadic, but occurring during the prevalence of epidemic or endemic diseases.—*Contagious,* or *Infectious.* Communicable from one individual to another by personal contact, or by effluvia diffused through the air.—*Congenital.* Born with the individual.—*Hereditary.* Descending from the parents to their offspring.—*Acquired.* Neither hereditary nor congenital, but dependent on some cause operating after birth.—*Sthenic.* Attended with strong activity of the vital powers. —*Asthenic.* Attended with sinking of the vital powers.

There are many other distinctions of diseases, of more limited application: thus, diseases are *febrile,* attended with fever; *exanthematous,* consisting in an eruptive fever; *intermittent,* marked by a regular cessation and recurrence of the symptoms; *remittent,* marked by a regular diminution and exacerbation of the symptoms; *mild,* unaccompanied with any formidable symptoms; *malignant,* severely depressing the vital powers, dangerous and intractable; the term malignant lowed to be played, the choice is rather limited, unless you take the view of Mr. Z., the German, who is quite an amateur, and who, upon being informed of the rule, replied, in his quiet, slow way, "All music is sacred!"

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B. P.,

of Birmi

RAILWAY BRIDGE, MATLOCK BANK IN THE [illegible]

DIVISION VI.

EXTRACTS AND CUTS FROM THE BEST AND [illegible] WORKS ON PHYSIOLOGY.

DISEASE. *Morbus*. Any deviation from the [illegible] the whole system or any particular organ. [illegible] some particular part.—*Constitutional*. [illegible] Marked by some disordered vital action, [illegible] peculiar to the individual disease.—*Idiopathic*. [illegible] any other disease.—*Symptomatic*, or [illegible] panying some other disease.—*Periodical*. [illegible] Severe and of short continuance.—*Chronic*. [illegible] Arising from adventitious causes [illegible] rally diffused among a population [illegible] atmospheric or other cause, the [illegible] Peculiar to, or especially [illegible] but occurring during the [illegible] *ous*, or *Infectious*. Com[illegible] contact, or by effluvia [illegible] individual.—*Heredi*[illegible] *quired*. Neither he[illegible] ating after [illegible] —*Asthenic* [illegible] has no very definite signification, but is applied chiefly to febrile diseases of the asthenic kind, and to local affections of a cancerous nature; *infantile*, most frequent in childhood; *puerperal*, incident to women soon after parturition.

DISEASES OF ARTISANS.—Besides the common causes of disease to which all mankind are more or less subject, there are some connected with particular occupations and modes of life, the investigation of which is alike important in a practical and philosophical point of view. These causes of disease may, in a general way, be referred—1. To confinement and bad ventilation. 2. To the effects of temperature and moisture. 3. To sedentary habits. 4. To over-fatigue. 5. To excessive exertion of some parts of the body, and inactivity of others. 6. To constrained and unnatural postures. 7. To the noxious influence of animal, vegetable, or mineral particles inhaled with the air, or otherwise applied to the body.

1. *Confinement and bad ventilation.*—The effects of these evils are most conspicuous in children, who suffer more severely from them than adults. In our manufacturing towns, where crowds of children are confined together in a close and impure atmosphere, it is found that the growth of the frame and the expansion of the mind are alike impeded, and the scrofulous diathesis induced; hence ensue deformity, defective development of the sexual system at puberty, and the various modifications of tubercular disease.

2. *Temperature and moisture.*—Constant exposure to either too high or too low a temperature is well known to debilitate the frame and impair the general health; and this effect is much increased, in either instance, by excessive moisture. It does not appear, however, that any ordinary exposure to these causes is productive of any particular diseases; and it is only when the body is subjected to sudden transitions from one to the other, that serious consequences ensue. These arise, chiefly, from the sudden obstruction of cutaneous perspiration, and rapid changes in the relative state of the circulation on the surface and in deep-seated organs. Brass and iron founders, glass-blowers, bakers, brewers, and various other artizans, are continually subjected to an injuriously warm atmosphere; and an imprudent transition to the open air, and still more an exposure to cold draughts, frequently gives rise to catarrhal and rheumatic affections, asthma, and visceral inflammation.

3. *Sedentary habits.*—The general effect of want of exercise is to diminish the tone of the muscles, to render the functions of the abdominal viscera torpid, and to induce langour and debility of the whole system, with a predominance of the lymphatic temperament: hence, dyspepsia, constipation, hæmorrhoids, obesity, and, in females, leucorrhœa, and derangements of the menstrual function. The sitting posture, also, when too long continued, is evidently inimical to the free performance of various important functions. Literary persons, clerks, weavers, sempstresses, and many others, are liable to suffer in their health from deficient exercise and the sitting posture. There are some occupations which combine an unnatural and constrained position of the body with sedentary habits: these cases will be presently noticed.

4. *Over-fatigue.*—An undue expenditure of muscular power doubtless tends to shorten the term of life, by gradually exhausting the vital energy; its effects, however, are seldom very appreciable, unless over-exertion be combined with intemperance, or habits otherwise unhealthy. Coalheavers, porters, and various others, are liable to suffer from over-exertion of the muscles.

5. *Excessive exertion of some parts of the body, and inactivity of others.*—The bad consequences of excessive exertion of particular organs is exemplified in diseases of the heart, lungs, and their great vessels, which are produced by over-exertion of the respiratory apparatus, in those who play on wind instruments and in singers. Amaurosis, cataract, and other diseases of the eyes, are common among those whose occupation obliges them to exercise their vision for a length of time on very minute objects, or to expose their eyes to a glare of light; as watchmakers, engravers, those engaged about large furnaces, &c.

To the combined influence of posture and local exertion, may be attributed the frequency of hernia at the groin in cavalry soldiers who ride with very long stirrups. The effect of inactivity on particular parts of the body seldom amounts to absolute disease; but muscular debility is the general result of insufficient exercise of any of the limbs: we have a familiar example in postilions, and others who are constantly riding, and who are frequently so weak in the legs, that, even when otherwise robust, they are unable to walk any distance without great fatigue.

6. *Constrained and unnatural postures.*—The evils arising from this cause are experienced by many classes of artizans. In tailors, shoemakers, button burnishers, and others, the bent position of the body weakens the spine, and interferes with the functions of the thoracic and abdominal viscera, while the strong pressure which is frequently made on the epigastrium is particularly injurious to the stomach: hence curvature of the spine, dyspepsia, gastrodynia, constipation, hæmorrhoids, asthma, and pulmonary diseases. Clerks in offices, who acquire the habit of leaning too much over the desk, and pressing the epigastrium against its edge, are subject to the same evils in a minor degree.

7. *The action of animal, vegetable, or mineral particles, inhaled with the air, or otherwise applied to the body.*—The principal morbific agents of this kind are mercury, lead, copper, arsenic, antimony, zinc, tin, the mineral acids, animal putrefaction, vegetable putrefaction, soot, and fine powders of various kinds, which produce mechanical irritation.—*Hooper's Medical Dictionary.*

FAINTING OR SYNCOPE. (From the Greek, I strike, or cut down.) Fainting or swooning. A disease in which the respiration and action of the heart either cease, or become much weaker than usual, with paleness and coldness, arising from diminished energy of the brain, or from organic affections of the heart. Cullen's species are:—

1. *Syncope cardiaca,* the cardiac syncope, arising without a visible cause, and with violent palpitation of the heart during the intervals, and depending generally on some organic affection of the heart or neighbouring vessels.

2. *Syncope occasionalis,* the exciting cause being manifest. The disease is sometimes preceded by anxiety about the præcordia, a sense of fulness ascending from the stomach towards the head, vertigo, or confusion of ideas, dimness of sight, and coldness of the extremities. The attacks are frequently attended with or end in vomiting, and sometimes in epileptic or other convulsions. The causes are sudden and violent emotions of the mind, pungent or disagreeable odours, derangement of the primæ viæ, debility from preceding disorders, loss of blood, spontaneous or artificial, the operation of paracentesis, the kneeling position, &c. An ordinary fainting fit is a matter of little importance, and occurs frequently in persons who are in general perfectly healthy. The actions of the system will generally be spontaneously restored in a short time. This is accelerated by the horizontal position, which throws the blood on the brain, and thereby stimulates it to resume its wonted functions. Pungent volatile substances applied to the nostrils, cold water sprinkled on the face or chest, and the internal administration of gentle stimulants as soon as the patient can swallow, may also be resorted to. The more formidable kinds of syncope, which arise from diseases of the heart or great vessels, or from profuse hæmorrhage, need not be noticed here, as their consideration belongs to the particular case in connexion with which they occur. (See page 220.)

BALDNESS. *Calvities.* The falling off of the hair, which is natural in old age, may be prematurely induced by a variety of causes. It is common after severe fevers; and consumptive patients, and those labouring under cachectic diseases, frequently lose their hair. In these cases it probably arises from debility of the cutaneous vessels, and insufficient nutrition of the bulbs of the hair. Some persons, who are in all respects healthy, lose their hair very early in life, without any obvious cause. Where the disposition to baldness is only slight, the use of animal fat, as bears' grease, &c., will often suffice to obviate it; but when the hair falls off in any quantity, the only effectual remedy is to shave the head.

DIGESTION. (*Digestio;* from *digero,* I dissolve.)

1. An operation in *Chemistry* and *Pharmacy,* in which such matters as are intended to act slowly on each other are exposed to a heat, continued for some time.

2. In *Physiology,* the change that the food undergoes in the stomach, by which it is converted into chyme.

The immediate object of digestion is formation of chyle, a matter destined for the reparation of the continual waste of the animal economy. The digestive organs contribute also in many other ways to nutrition. If we judge of the importance of a function by the number and variety of its organs, digestion ought to be placed in the first rank; no other function of the animal economy presents such a complicated apparatus. There always exists an evident relation between the sort of aliment proper for an animal, and the disposition of its digestive organs. If, by their nature, the aliments are very different from the elements which compose the animal, if, for example, it is graminivorous, the dimensions of the apparatus will be more complicated and more considerable; if, on the contrary, the animal feeds on flesh, the digestive organs will be fewer and more simple, as is seen in the carnivorous animals. Man, called to use equally animal and vegetable aliments, keeps a mean between the graminivorous and carnivorous animals, as to the disposition and complication of his digestive apparatus, without deserving, on that account, to be called omnivorous.

We may represent the digestive apparatus as a long canal, variously twisted upon itself, wide in certain points, narrow in others, susceptible of contracting or enlarging its dimensions, and into which a great quantity of fluids are poured by means of different ducts. The canal is divided into many parts by anatomists:—

1. The mouth.
2. The pharynx.
3. The œsophagus.
4. The stomach.
5. The small intestines.
6. The great intestines.
7. The anus.

Two membraneous layers form the sides of the digestive canal in its whole length. The inner layer, which is intended to be in contact with the aliments, consists of a mucous membrane, the appearance and structure of which vary in every one of the portions of the canal; so that it is not the same in the pharynx as in the mouth, nor is it in the stomach like what it is in the œsophagus, &c. In the lips and the anus this membrane becomes confounded with the skin. The second layer of the sides of the digestive canal is muscular; it is composed of two layers of fibres, one longitudinal, the other circular. The arrangement, the thickness, the nature of the fibres which enter into the composition of these strata are different, according as they are observed in the mouth, in the œsophagus, or in the large intestine, &c. A great number of blood-vessels go to, or come from, the digestive canal; but the abdominal portion of this canal receives a quantity incomparably greater than the superior parts. This presents only what are necessary for its nutrition, and the inconsiderable secretion of which it is the seat; whilst the number and the volume of the vessels that belong to the abdominal portion show that it must be the agent of a considerable secretion. The chyliferous vessels arise exclusively from the small intestine.

As to the nerves, they are distributed to the digestive canal in an order inverse to that of the vessels; that is, the cephalic parts, *cervical* and *pectoral,* receive a great deal more than the abdominal portion, the stomach excepted, where the two nerves of the eighth pair terminate. The other parts of the canal scarcely receive any branch of the cerebral nerves. The only nerves that are observed, proceed from the *subdiaphragmatic* ganglions of the great sympathetic.

We shall see, further on, the relation that exists between the modes of distribution of the nerves, and the functions of the superior and inferior portions of the digestive canal.

The bodies that pour fluids into the digestive canal, are—

1. The *digestive mucous membrane.*
2. *Isolated follicles* that are spread in great number in the whole length of this membrane.
3. The *agglomerated follicles* which are found at the isthmus of the throat, between the *pillars* of the *velum* of the palate, and sometimes at the junction of the œsophagus and the stomach.
4. The *mucous glands*, which exist in a greater or less number in the sides of the cheeks, in the roof of the palate, and around the œsophagus.
5. The *parotid*, the *submaxillary*, and *sublingual glands*, which secrete the saliva of the mouth, the liver, and the pancreas; the first of which pours the bile, the second the pancreatic juice, by distinct canals, into the superior part of the small intestine, called duodenum. All the digestive organs contained in the abdominal cavity are immediately covered, more or less completely, by the serous membrane called the peritonæum. This membrane, by the manner in which it is disposed, and by its physical and vital properties, is very useful in the act of digestion, by preserving to the organs their respective relations, by favouring their changes of volume, by rendering easy the sliding motions which they perform upon each other and upon the adjoining parts.

The surface of the mucous digestive membrane is always lubricated by a glutinous adhesive matter, more or less abundant, that is seen in greatest quantity where there exist no follicles,—a circumstance which seems to indicate that these are not the only secreting organs. A part of this matter, to which is given generally the name of *mucus*, continually evaporates, so that there exists habitually a certain quantity of vapours in all the points of the digestive canal. The chemical nature of this substance, as taken at the intestinal surface, is still very little known. It is transparent, with a light grey tint; it adheres to the membrane which forms it; its taste is salt, and its acidity is shown by the reagents; its formation still continues some time after death. That which is formed in the mouth, in the pharynx, and in the œsophagus, goes into the stomach mixed with the saliva and the fluids of the mucous glands, by movements of deglutition, which succeed each other at near intervals. According to this detail, it would appear that the stomach ought to contain, after it has been some time empty of aliments, a considerable quantity of a mixture of mucus, of saliva, and follicular fluid. This observation is not proved, at least in the greatest number of individuals. However, in a number of persons, who are evidently in a particular state, there exist, in the morning, in the stomach, many ounces of this mixture. In certain cases it is foamy, slightly troubled, very little viscous, holding suspended some flakes of mucus: its taste is quite acid, not disagreeable, very sensible in the throat, acting upon the teeth, so as to diminish the polish of their surface, and rendering their motion upon each other more difficult. This liquid reddens paper stained with turnsole.

In the same individual, in other circumstances, and with the same appearances as to colour, transparency, and consistency, the liquid of the stomach had no savour, nor any acid property; it is a little salt; the solution of potash, as well as the nitric and sulphuric acids, produced in it no apparent change.

The diaphragm, and the abdominal muscles, produce a sort of perpetual agitation of the digestive organs contained in the abdominal cavity; they exert upon them a continual pressure, which becomes sometimes very considerable.

The digestive actions which by their union constitute digestion are:—

1. The apprehension of aliments.
2. Mastication.
3. Insalivation.
4. Deglutition.

5. The action of the stomach.
6. The action of the small intestines.
7. The action of the large intestines.
8. The expulsion of the fæcal matter.

All the digestive actions do not equally contribute to the production of chyle; the action of the stomach, and that of the small intestines, are alone absolutely necessary. The digestion of solid food requires generally the eight digestive actions: that of drinks is much more simple; it comprehends only apprehension, deglutition, the action of the stomach, and that of the small intestines.

The mastication and deglutition of the food being effected, we have now to notice the action of the stomach on the aliment; chemical alterations will now present themselves to our examination. In the stomach, the food is transformed into a matter proper to animals, which is named *chyme*.

The accumulation of food in the stomach is accompanied by many sensations, of which it is necessary to take account:—At first it is an agreeable feeling, or the pleasure of a want satisfied. Hunger is appeased by degrees; the general weakness that accompanied it is replaced by an active state, and a feeling of new force. If the introduction of food is continued, we experience a sensation of fulness and satiety, which indicates that the stomach is sufficiently replenished; and if, contrary to this instinctive information, we still persist to make use of food, disgust and nausea soon arrive, and they are very soon followed by vomiting. These different impressions must not be attributed to the volume of the aliments alone. Everything being equal in other respects, food, very nutritive, occasions, more promptly, the feeling of satiety. A substance which is not very nourishing does not easily calm hunger, though it is taken in great quantity.

The mucous membrane of the stomach, then, is endowed with considerable sensibility, since it distinguishes the nature of substances which come in contact with it. This property is very strongly marked if an irritating poisonous substance is swallowed; intolerable pain is then felt. We also know that the stomach is sensible to the temperature of food. We cannot doubt that the presence of the aliments of the stomach causes a great excitement, from the redness of the mucous membrane, from the quantity of fluid it secretes, and the volume of vessels directed there; but this is favourable to chymification. This excitement of the stomach influences the general state of the functions. The time that the aliments remain in the stomach is considerable, generally several hours: it is during this stay that they are transformed into chyme.

Changes of the aliments in the stomach.—It is more than an hour before the food suffers any apparent change in the stomach, more than what results from the perspiratory and mucous fluids with which they are mixed, and which are continually renewed. The stomach is uniformly distended during this time; but the whole extent of the pyloric portion afterwards contracts, particularly that nearest the splenic portion, into which the food is pressed. Afterwards, there is nothing found in the pyloric portion but chyme, mixed with a small quantity of unchanged food. The best authors have agreed to consider the chyme as a homogeneous substance, pultaceous, greyish, of a sweetish taste, insipid, slightly acid, and preserving some of the properties of the food. This description leaves much to be explained.

The result of Dr. Magendie's experiments are as follows:—

A. There are as many sorts of chyme as there are different sorts of food, if we judge by the colour, consistence, appearance, &c.; as we may easily ascertain by giving different simple alimentary substances to dogs to eat, and killing them during the operation of digestion. He frequently found the same result in man, in the dead bodies of criminals, or persons dead by accident.

B. Animal substances are generally more easily and completely changed than vegetable substances. It frequently happens that these last traverse the whole intestinal canal without changing their apparent properties. He has frequently seen in the rectum, and in the small intestines, the vegetables which are used in soup, spinach, sorrel, &c., which had preserved the most part of their properties; their colour alone appeared sensibly changed by the contact of the bile.

Chyme is formed particularly in the pyloric portion. The food appears to be introduced slowly into it; and during the time they remain, they undergo transformation. The doctor believes, however, that he has observed frequently chymous matter at the surface of the mass of aliments which fill the splenic portion; but the aliments in general preserve their properties in this part of the stomach.

All the alimentary substances are not transformed into chyme with the same promptitude.

Generally the fat substances, the tendons, the cartilages, the concrete albumen, the mucilaginous and sweet vegetables, resist more the action of the stomach than the caseous, fibrinous, and glutinous substances. Even some substances appear refractory; such as the bones, the epidermis of fruits, their stones, and whole seeds, &c. In determining the digestibility of food, the volume of the portions swallowed ought to be taken into account. The largest pieces, of whatever nature, remain longest in the stomach; on the contrary, a substance which is not digestible, if it is very small, such as grape-stones, does not rest in the stomach, but passes quickly with the chyme into the intestine. In respect of the facility and quickness of the formation of chyme, it is different in every different individual. It is evident, after what has been said, that to fix the necessary time for the chymification of all the food contained in the stomach, we ought to take into account their quantity, their chemical nature, the manner in which the mastification acts upon them, and the individual disposition. However, in four or five hours after an ordinary meal, the transformation of the whole of the food into chyme is generally effected. (See page 254.)

DYSPEPSIA. (From the Greek,—with difficulty I concoct.)—Indigestion. This very common disease consists generally in a want of appetite, a sudden and transient distension of the stomach, eructations of various kinds, heartburn, pain in the region of the stomach, perhaps vomiting, rumbling noise in the bowels, and frequently costiveness or diarrhœa. A long train of nervous symptoms are also frequent attendants. In some cases a few only of the above symptoms are present, while in others many additional ones are experienced, such as severe pains in the head and chest, and various affections of the sight, as slight degrees of amaurosis, double vision, &c.

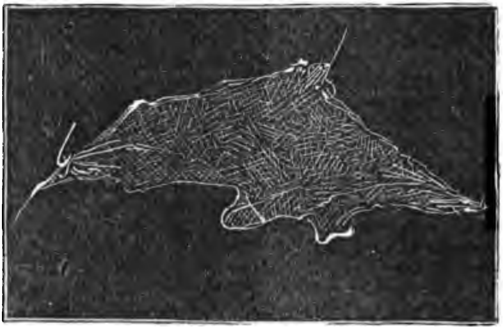
It occurs at all ages, but chiefly in persons between thirty and forty years of age, and is principally to be met with in those who devote much time to study, or who lead either a very sedentary or an irregular life. A great singularity attendant on it is, that it may and often does continue a great length of time, without any aggravation or remission of the symptoms. Grief and uneasiness of mind, intense study, profuse evacuations, excess in venery, hard drinking, particularly of spirituous liquors, and the abuse of tea, tobacco, opium, and other narcotics, immoderate repletion, and over-distension of the stomach, and much exposure to moist and cold air, when without exercise, are the causes which usually occasion dyspepsia. Dyspepsia never proves fatal, unless when, by a very long continuance, it give rise to some other disease, as organic lesions of the viscera, dropsy, or phthisis; but it is at all times very difficult to remove, and particularly so in warm climates. It is often a secondary and symptomatic disease, caused by structural alterations of some part of the stomach; and there are few organic diseases in the neighbouring viscera from which the stomach does not become weakened, and indigestion result.

The term dyspepsia has been very vaguely used, and a great variety of symptoms, arising from a proportionate number of different morbid states, have been associated under the same name. The writings of Marcus and Broussais have led many to refer these symptoms universally to inflammatory states of different parts of the gastro-enteric membrane; a doctrine which, like most others of a similar exclusive character, is at once confuted by an appeal to actual observation; and which is especially pernicious in a practical point of view, inasmuch as it too often inflicts leeches and starvation, where they can very ill be borne. It is indeed true that dyspeptic symptoms are often produced by the inflammatory states alluded to; and it is true, as illustrated by Dr. Wilson Philip, that when functional derangement has existed for a length of time, the vascular actions of the part become affected, and inflammation is set up; but if we are content to be guided simply by what is to be seen on the dissection of those who, when living, have been subject to dyspepsia, we shall be convinced that chronic inflammation is far from being the general cause of this affection. The morbid states which give rise to dyspeptic symptoms appear to be atony and torpor of the organs; morbid irritability, distinct from an inflammatory state; depraved secretion; and chronic inflammation. To these, severally or combined in various degrees, restricted to particular parts, or more extensively involving the alimentary canal, the diversity of symptoms, included under the term indigestion, may for the most part be traced.

I quote the following and other articles from Dr. Southwood Smith's very interesting work, "The Philosophy of Health," in two volumes, with many cuts. Cox, King William-street, London, and all booksellers; price 5s. This elaborate work enters very extensively into the physical and mental constitution of man, and is well worth reading.

FIRST OR PRIMARY STRUCTURE OF THE BODY.—Dr. Smith says,—"The first primary tissue of the body is the peculiar substance termed *membrane*. It has been already stated that one of the ultimate forms of animal matter is a coagulable substance, becoming concrete or solid under the process of coagulation. The commencement of organization seems to be the arrangement of this concrete matter into straight thready lines, at first so small as to be imperceptible to the naked eye. Vast numbers of these threads successively uniting, at length form a single thread of sufficient magnitude to be visible, but still smaller than the finest thread of the silkworm. If the length of these threads be greater than their breadth, they are called fibres; if, on the contrary, their breadth exceed their length, they are termed plates or laminæ. By the approximation of these fibres or plates in every possible direction, and by their accumulation, combination, and condensation, is constituted the simplest form of organized substance, the primary tissue called membrane.

"Membrane once formed is extensively employed in the composition of the body; it is indeed the material principally used in producing, covering, containing, protecting, and fixing every other component part of it. In a word, it forms the basis upon which the other parts are superinduced; or rather the mould into which their particles are deposited; so that were it possible to remove every other kind of matter, and to leave this primary tissue unaltered in figure and



A single film of the cellular tissue (composing the substance of the body), lifted up and slightly distended. —*From Smith.*

undiminished in bulk, the general form and outline of the body, as well as the form and outline of all its individual parts, would remain unchanged. Membrane exists under several distinct forms; a knowledge of the peculiarities of which will materially assist us in understanding the composition of the body. The simplest form of membrane, and that which is conceived to constitute the original structure from which all the others are produced, is termed the *cellular*. When in thin slices, *cellular membrane* appears as a semi-transparent and colourless substance; when examined in thicker masses, it is of a whitish or greyish colour. It consists of minute threads, which cross each other in every possible direction, leaving spaces between them, and thus forming a mesh or network, not unlike the spider's web. The term cells, given to these interspaces, is employed rather in a figurative sense than as the expression of the fact; for there are no such distinct partitions as the term cell implies. The best conception that can be formed of the arrangement of the component parts of this structure is, to a suppose a substance consisting of an infinite number of slender thready lines crossing each other in every possible direction. The interspaces between these lines during life, and in the state of health, are filled with a thin exhalation of an aqueous nature, a vapour rather than a fluid, rendering and keeping the tissue always moist. This vapour consists of the thinner part of the blood, poured into these interstitial spaces by a process hereafter to be described, termed secretion. When occupying those spaces, it makes no long abode within them, but is speedily removed by the process of absorption. In health, these two operations exactly equal each other; but if any cause arise to disturb the equilibrium, the vapour accumulates, condenses, and forms an aqueous fluid, which distends the cells and gravitates to the most depending parts. Slightly organized as this tissue is, and indistinct as its vital functions may be, it is obvious that it must be the seat of at least two vital functions, secretion and absorption.

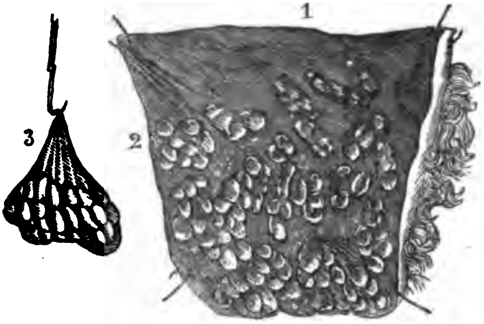
"It is certain that the interspaces or cells of this membrane have no determinate form or size, that they communicate freely with each other, and that this communication extends over the whole body; for if a limb which has been infiltrated be frozen, a thousand small icicles will be formed, assuming the shape of the containing cells, some of which are found to be circular, and others cylindrical, and so on. If air or water escape into any particular part of the body, it is often effused over the whole extent of it, and butchers are observed to inflate animals by making a puncture in some part where the cellular tissue is loose, and from this one aperture the air is forced to the most distant parts of the body.

"Cellular membrane, variously modified and disposed, forms the main bulk of all the other solid parts of the body, constituting their common envelope and bond of union, and filling up all their interstices. It is dense or loose, coarse or fine, according to its situation and office. Wherever it is subject to pressure, it is dense and firm, as in the palm of the hand and the sole of the foot; around the internal organs it is more loose and delicate, and it becomes finer and finer as it divides and subdivides, in order to envelope the soft and tender structures of the body

A portion of cellular tissue, very highly magnified, showing the strings of globules of which its ultimate fibres are by some supposed to consist.

"According to some who have carefully examined with the microscope its component threads, they consist of minute particles of a globular figure; other microscopical observers regard the cellular threads as coagulated or condensed animal substance, perfectly amorphous (without form).

"Every part of this tissue is penetrated by arteries, veins, absorbents, and nerves, endowing it with properties truly vital, though in a less degree than any of the other primary tissues; and varied and important as the uses are which it serves in the economy, the most manifest, though certainly not the only ones, are those which depend upon its physical properties of cohesion, flexibility, extensibility, and elasticity.



1, a portion of adipose (fatty) tissue; 2, minute bags containing the fat; 3, a cluster of the bags, separated and suspended

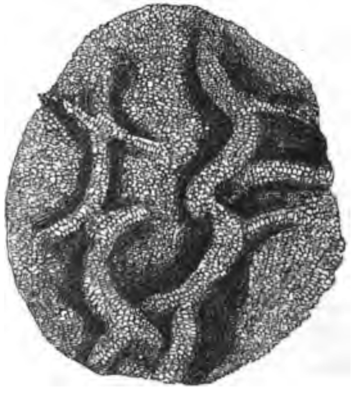
"The tissue which contains the fat, termed the *adipose*, is the second form of membrane; it is obviously a modification of the cellular, from which it differs, both in the magnitude of its fibres, whence it constitutes a tougher and coarser web, and in their arrangement; for it is so disposed as to form distinct bags in which the fat is contained. Adipose tissue consists of rounded packets, separated from each other by furrows; each packet is composed of small spheroidal particles; each particle is again divisible into still smaller grains, which, on minute inspection, present the appearance of vesicles filled with the adipose matter.

"The cells of the cellular tissue, as has been shown, are continuous over the whole body; but each adipose vesicle is a distinct bag, having no communication whatever with any other. The cellular tissue is universally diffused; but the adipose is placed only in particular parts of the body; principally beneath the skin, and more especially between the skin and the abdominal muscles, and around some of the organs contained in the chest and abdomen, as the heart, the kidneys, the mesentery, and the omenta. In most of these situations some portion of it is generally found, whatever be the degree of leanness to which the body may be reduced; while in the cranium, the brain, the eye, the ear, the nose, and several other organs, there is none, whatever be the degree of corpulency. The uses of the fat, which are various, will be stated hereafter.

"The third form of membrane is termed the *serous*. Like the adipose, *serous membrane* is a modification of the cellular, and, like it also, it is limited in its situation to particular parts of the body, that is, to its three great cavities, namely, the head, the chest, and the abdomen. To the two latter it affords an internal lining, and to all the organs contained in all the three cavities it affords a covering. By its external surface it is united to the wall of the cavity or the substance of the organ it invests; by its internal surface it is free and unattached: whence this surface is in contact only with itself, forming a close cavity or shut sac, having no communication with the external air. Smooth and polished, it is rendered moist by a fluid which is supposed to be exhaled in a gaseous state from the serum of the blood; and from this serous fluid the membrane derives its name. Though thin, serous membrane is dense, compact, and of great strength in proportion to its bulk: it is extensible and elastic; extensible, for it expands with the dilatation of the chest in inspiration; elastic, for it contracts with the diminished size of the chest in expiration. In like manner, it stretches with the enlargement of the stomach during a hearty meal, and contracts as the stomach gradually diminishes on emptying itself of its contents. It is furnished with no blood-vessels large enough to admit the colouring matter of the blood; but it is supplied with a great number of the colourless vessels termed exhalents, with the vessels termed absorbents, and with a few nerves. It indicates no vital properties, but those which are common to the simple form of the primary tissue. Its specific uses are to afford a lining to the internal cavities; to furnish a covering to the internal organs; by its polished and smooth surface, to allow a free motion of those organs on each other, and by the moisture with which it is lubricated, to prevent them from adhering together, however closely, or for however long a period they may be in contact.

"The fourth form of membrane, the *fibrous*, named from the obvious arrangement of its component parts, consists of longitudinal fibres, large enough to be visible to the naked eye, placed parallel to each other, and closely united. Sometimes these fibres are combined in such a manner as to form a continuous and extended surface, constituting a thin, smooth, dense, and strong membrane, such as that which lines the external surface of bones termed *periosteum*, or the internal surface of the skull (dura mater). At other times they form a firm and tough expansion (aponeurosis) which descends between certain muscles, separating them from each other, and affording a fixed point for the origin or insertion of neighbouring muscles; or which is stretched over muscles, and sometimes over even an entire limb, in order to confine the muscles firmly in their situation, and to aid and direct their action. Fibrous membrane also constitutes the compact, strong, tough, and flexible bands used for tying parts firmly together, termed *ligaments*, principally employed in connecting the bones with each other, and particularly about the joints; and lastly, fibrous membrane forms the rounded white cords in which muscles often terminate, called *tendons*, the principal use of which is to connect the muscles with the bones, and to serve as cords or ropes to transmit the action of the muscle to a distant point, in the accomplishment of which purposes their operation appears to be entirely mechanical.

"The fifth form of membrane, the *mucous*, derives its name from the peculiar fluid with which its surface is covered, called mucus, and which is secreted by numerous minute glands, imbedded in the substance of the membrane. As serous membrane forms a shut sac, completely excluding the air, mucous membrane, on the contrary, lines the various cavities which are exposed to the air, such as the mouth, the nostrils, the windpipe, the gullet, the stomach, the intestines, the urinary organs, and the uterine system. Its internal surface, or that by which it is attached to the passages it lines, is smooth and dense; its external surface, or that which is exposed to the contact of the air, is soft and pulpy, like the pile of velvet. It



A portion of the stomach, shôwing its internal surface, or mucous coat.

bears a considerable resemblance to the external surface of the rind of the ripe peach, owing to the ciliated membrane.

"Unlike all the other tissues of this class, the mucous membranes are the immediate seat of some of the most important functions of the economy; in the lung, respiration; in the stomach, of digestion; in one part of the intestine, of chylification; in another, of excretion; while in the mouth and nose, they are the seat of the animal functions of taste and smell; and they are highly organized in accordance with the importance of the functions they perform.

"The last form of membrane which it is necessary to our present purpose to particularize is that which constitutes the external covering of the body, and which is called the *skin*. The skin is everywhere directly continuous with the mucous membranes that line the internal passages, and its structure is perfectly analogous. Both the external and the internal surface of the body may be said therefore to be covered by a continuous membrane, possessing essentially the same organization, and almost identically the same chemical composition. The skin is an organ which performs exceedingly varied and important functions in the economy, to the understanding of which it is necessary to have a clear conception of its structure; some further account of it will therefore be required; but this will be more advantageously given when the offices it serves are explained.

"Such is the structure, and such are the properties, of the first distinct form of organized matter. The second primary tissue, termed the *cartilaginous*, is a substance intermediate between membrane and bone. The nature of its organization is not clearly ascertained. By some anatomists, it is regarded as a uniform and homogeneous substance, like firm jelly, without fibres, plates, or cells; others state that they have been able to detect in it longitudinal fibres, interlaced by other fibres in an oblique and transverse direction, but without determinate order. All are agreed that it is without visible vessels or nerves: not that it is supposed to be destitute of them, but that they are so minute as to elude observation. Its manifest properties are wholly mechanical. It is dense, strong, inextensible, flexible, and highly elastic. It is chiefly by its property of elasticity that it accomplishes the various purposes it serves in the economy. It is placed at the extremities of bones, especially about the joints, where, by its smooth surface, it facilitates motion, and, by its yielding nature, prevents the shock or jar which would be produced were the same kind and degree of motion effected by a rigid and inflexible substance. Where a certain degree of strength with a considerable degree of flexibility are required, it supplies the place of bone, as in the spinal column, the ribs, and the larynx.

"The third distinct form of organized matter is termed the OSSEOUS tissue. Bone is composed of two distinct substances, an animal and an earthy matter: the former organic, the latter inorganic. The animal or organic matter is analogous both in its nature and in its arrangement to cellular tissue; the earthy or inorganic matter consists of phosphoric acid combined with lime, forming phosphate of lime. The cellular tissue is aggregated into plates or laminæ, which are placed one upon another, leaving between them interspaces or cells.

"All the primary tissues which have now been considered consist of precisely the same proximate principles. Albumen is the basis of them all; with the albumen is always mixed more or less gelatin, together with a minute quantity of saline substance: to the osseous tissue is superadded a large portion of earthy matter. With the exception of the mucous, the organization of all these tissues is simple; their vital properties are low in kind and in degree; their decided properties are physical, and the uses they serve in the economy are almost wholly mechanical. But we next come to a tissue widely different in every one of those circumstances, a tissue consisting of a new kind of animal matter, and endowed with a property not only peculiar to itself, but proper to living substance, and characteristic of a high degree of vital power. MUSCULAR TISSUE, the fourth distinct form of animal matter, commonly known under the name of flesh, is a substance resembling no other in nature. It consists of a soft and pulpy substance, having little cohesive power, arranged into fibres which are distinctly visible to the naked eye, and which are disposed in a regular and uniform manner, being placed close and parallel to each other. These fibres are everywhere pretty uniformly the same in shape, size, and general appearance, being delicate, soft, flattened, and, though consisting of a tender pulp, still solid. When examined under the microscope, fibres, which to the naked eye appear to be single threads, are seen to divide successively into smaller threads, the minutest or the ultimate division not exceeding, as is supposed, the 40,000th part of an inch in diameter. On the other hand, the fibres which are large enough to be visible to the naked eye are obviously aggregated into bundles of different magnitude in different muscles, but always of the same uniform size in the same muscle.

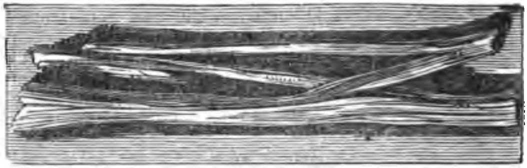
"The ultimate thread, or the minutest division of which the muscular fibre is susceptible, is called a filament; the smallest thread which can be distinguished by the naked eye is termed a fibre; and the bundle which is formed by the union of fibres is denominated a fasciculus. The proper muscular substance is thus arranged into three distinct forms progressively increasing in size, — the filament, the fibre, and the fasciculus. The filament, the fibre, the fasciculus, as well as the muscle itself, formed by the aggregation of fasciculi, is each enclosed in its own distinct sheath of cellular membrane.

"Every ultimate thread or filament appears to be provided with the ultimate branch of an artery, vein, and nerve. These vessels are seen ramifying on the surface of the delicate web of membrane that encloses the pulp, but cannot be traced into it.

"The proximate principle of which the muscular pulp is composed is fibrin. From the pulp, when inclosed in its sheath of membrane, albumen, jelly, various salts, and a peculiar animal extract called osmazone, are also obtained; but these substances are probably derived from the membranous, not the muscular, matter. Fibrin contains a larger proportion of azote—the element peculiar to the animal body, and by the possession of which its chemical composition is distinguished from that of the vegetable—than any other animal substance.

Ultimate fibres of muscle, greatly magnified, showing the strings of globules of which they are supposed to consist.

"Muscular tissue possesses a slight degree of cohesion, a high degree of flexibility and extensibility, but no degree of elasticity; for although muscle, considered as a compound of muscular substance and membrane, be highly elastic, yet this property is probably altogether owing to the membranous matter in which it is enveloped. Its peculiar and distinctive property is vital, not physical, and consists in the power of diminishing its length, or of contracting or shortening itself, on the application of a stimulus. This pro-


Portion of the trunk of a nerve; dividing into branches.

perty, which is termed contractility, is the great, if not the sole, source of motion in the body. Without doubt, elasticity and gravity, under the generating and controlling power of contractility, aid in accomplishing various kinds of motion. Thus membranes, tendons, ligaments, cartilages, and bones, by their physical and mechanical properties, modify, economize, facilitate, concentrate, and direct the motive power generated by the pure muscular substance; but still the only real source of motion in the body is muscular tissue, and the only mode in which motion is generated is by contractility. This will be more fully understood hereafter."

(DR. SMITH) ON SECRETIONS.—"Since every secreting organ is copiously supplied with blood, it follows that a great part of the blood of the body is always circulating in secreting organs; and, indeed, it is to afford materials for the action of these organs that the blood itself is formed.

"How do these organs act upon the blood?

"All that is known of the course of that portion of the blood which flows through an organ of secretion is, that it passes into arteries of extreme minuteness, which are spread out upon the external walls of the elementary secreting bodies, and which, as far as they can be traced, pass into capillary veins,—nowhere terminating by open mouths—nowhere presenting visible outlets or pores; their contents probably transuding through their thin and tender coats by the process of endosmose.

"As it is flowing through these capillary arteries, the blood undergoes the transformations effected by secretion, forming—1. The fluids which are added to the aliment, and which accomplish its solution, and change it into chyme. 2. The fluids which are added to the chyme to convert it into chyle, and both to chyle and lymph, to assist in their assimilation. 3. The fluids which, poured into the cavities, facilitate automatic or voluntary movements. 4. The fluids which serve as the media to the organs of the senses by which external objects are conveyed to the sentient extremities of the nerves for their excitement. 5. The fluids which, deposited at different points of the cellular tissue, when more aliment is received than is needed, serve as reservoirs of nutriment to be absorbed when more aliment is required than can be afforded by the digestive organs. 6. The fluids which are subsequently to be converted into solids. 7. The fluids which are eliminated from the common mass, whether of fluids or solids, to be carried out of the system as excrementitious substances. 8. In addition to all these substances, which are indispensable to the preservation of the individual, those which are necessary to the perpetuation of the species.

"In order to form any conception of the mode in which the secreting organs act upon the blood, so as to elaborate from it such diversified substances, it is necessary to consider the chemical composition of the different products of secretion, and the degrees in which they really differ from each other, and form the common mass of blood out of which they are eliminated.

"By chemical analysis, it is established that all the substances which are formed from the blood by the process of secretion are either water, albumen, mucus, jelly, fibrin, oil, resin, or salts; and, consequently, that all the secretions are either aqueous, albuminous, mucous, gelatinous, fibrinous, resinous, oleaginous, or saline.

"1. Aqueous Secretions.—From the entire surface of the skin, and also from that of the lungs, there is constantly poured a quantity of water, derived from the blood, mixed with some animal matters, which, however, are so minute in quantity that they do not communicate to the aqueous fluid any specific character.

"2. Albuminous Secretions.—All the close cavities, as the thorax, the abdomen, the pericardium, the ventricles of the brain, and even the interstices of the cellular tissue, are constantly moistened by a fluid which is termed serous, because it is derived from the serum of the blood. This serous fluid consists of albumen in a fluid form, and it differs from the serum of the blood chiefly in containing in equal volumes a smaller proportion of albumen. Membranes of all kinds consist essentially of coagulated albumen; and the albumen, as constituting these tissues, differs from albumen as existing in the serum of the blood only in being unmixed with extraneous matter, and in being in a solid form.

"3. Mucous Secretions.—As all the close cavities, or those which are protected from the external air, are moistened with a serous fluid, so all the surfaces which are exposed to the external air, as the mouth, the nostrils, the air-passages, and the whole extent of the alimentary canal, are moistened with a mucous fluid. Mucus does not exist already formed in the blood. It is always the product of a gland. Some of the mucous glands are among the most elaborate of the body; still the main action of the gland seems to be to coagulate the albumen of the blood; for the basis of mucus is coagulated albumen. The fluid that lubricates the mucous surfaces in their whole extent, the saliva, the gastric juice, the tears, the essential part of the fluid formed in the testes and in the ovaria, are mucous secretions. Hence the most complex and elaborate functions of the body, respiration, digestion, reproduction, are intimately connected with the mucous secretions; nevertheless, as far as regards their chemical nature, the mucous differ but slightly from the albuminous secretions; and it is probable that a slight change in the secreting organ is sufficient to convert the one into the other. By the irritation of mercury on the salivary glands, the saliva, properly of a mucous, is sometimes converted into a substance of an albuminous nature; and irritation in some of the serous membranes occasionally causes them to secrete a mucous fluid.

"4. Gelatinous Secretions.—The proximate principle termed jelly abounds plentifully in several of the solids of the body, and more especially in the skin; but jelly does not exist already formed in the blood. Yet it is not the product of a gland, neither is there any known organ by which it is formed. Out of the body, albumen is capable of being converted into jelly by digestion in dilute nitric acid: this conversion is probably effected by the addition of a portion of oxygen to the albumen. Albumen contains more carbon and less oxygen than jelly; the proportions of hydrogen and nitrogen in both being nearly the same. According to MM. Gay Lussac and Thénard, the elements of albumen and jelly are—

	Carbon.	Oxygen.	Hydrogen.	Nitrogen.
Albumen . .	52.883	23.872	7.54	15.765
Jelly . . .	47.881	27.227	7.914	16.988

The conversion of albumen into jelly is incessantly going on in the system; and the process accomplishes most extended and important uses. In the lungs, at the moment of inspiration, oxygen enters into the blood in a state of loose combination: but in the system, at every point where the conversion of albumen into jelly takes place, oxygen probably enters into a state of chemical combination with albumen; and the new proximate principle, jelly, is the result. The agent by which this conversion is effected appears to be the capillary artery: the primary object of the action is the production of a material necessary for the formation of the tissues of which jelly constitutes the basis, as the skin; but a secondary and most important object is the production of animal heat; the carbon that furnishes one material of the fire being given off by the albumen at the moment of its transition into jelly; and the oxygen that furnishes the other material of the fire being afforded to the blood at the moment of inspiration. This view affords a beautiful exposition of the reason why jelly forms so large a constituent of the skin in all animals. The great combustion of oxygen and carbon, the main fire that supports the temperature of the body, is placed where it is most needed, at the external surface.

"5. Fibrinous Secretions.—The pure muscular fibre, or the basis of the flesh, is identical with the fibrin of the blood. It contains a larger proportion of nitrogen, the peculiar animal principle, and is consequently more highly animalized, than the preceding substances. It appears to be simply discharged from the circulating blood by the capillary arteries, and deposited in its appropriate situation; no material change in its constitution being, it would seem necessary to fit it for its office.

"A third most important agent in the process of secretion is some influence derived from the nervous system.

"1. It is proved, by direct experiment, that the destruction of the nervous apparatus, or of any considerable portion of it, stops the process of secretion. By experiments performed by Mr. Brodie, it is ascertained that the secretion of the urine is suspended by the removal or destruction of the brain, though the circulation be maintained in its full vigour by artificial respiration.

"2. The section, and still more the removal, of a portion of the sentient nerves of the stomach (the par vagum or eighth pair), according to some experimentalists, deranges and impedes, according to others, totally arrests, the process of digestion."

ORGANIC AND ANIMAL LIFE.—By organic life is meant the life of the substances of the body; by animal life is meant the power of the will and the mind over the whole, by the aid of the nervous system. As will be seen in these extracts from Dr. Smith, the substance of the body may have life in it for a short period when the animal power has left it.

"The organs and functions of the animal life are incapable of continuity of action. No voluntary muscle can maintain its action beyond a given time; no effort of the will can keep it in a state of uninterrupted contraction; relaxation must alternate with contraction; and even this alternate action cannot go on long without rest. No organ of sense can continue to receive impression after impression without fatigue. By protracted exertion the ear loses its sensibility to sound, the eye to light, the tongue to savour, and the touch to the quality of bodies about which it is conversant. The brain cannot carry on its intellectual operations with vigour beyond a certain period; the trains of ideas with which it works become, after a time, indistinct and confused; nor is it capable of reacting with energy until it has remained in a state of rest proportioned to the duration of its preceding activity.

"And this rest is sleep. Sleep is the repose of the senses, the rest of the muscles, their support and sustenance. What food is to the organic, sleep is to the animal life. Nutrition can no more go on without aliment, than sensation, thought, and motion without sleep.

"But it is the animal life only that sleeps: death would be the consequence of the momentary slumber of the organic. If, when the brain betook itself to repose, the engine that moves the blood ceased to supply it with its vital fluid, never again would it awake. The animal life (*the power of the will and mind*) is active only during a portion of its existence; the activity of the organic life (*substance of the body*) is never for a moment suspended: and in order to endow its organs with the power of continuing this uninterrupted action, they are rendered incapable of fatigue: fatigue, on the contrary, is inseparable from the action of the organs of the animal life (*the mind and will*); fatigue imposes the necessity of rest; rest is sleep, and sleep is renovation.

"Between all the functions of the organic life there is a close relation and dependence. Without the circulation there can be no secretion; without secretion, no digestion; without digestion, no nutrition; without nutrition, no new supply of circulating matter, and so through the entire circle. But the functions of the animal life are not thus dependent on each other. One of the circle may be disordered without much disturbance of the rest; and one may cease altogether, while another continues in vigorous action. Sensation may be lost, while motion continues: and the muscle may contract, though it cannot feel. One organ of sense may sleep while the rest are awake. One intellectual faculty may be in operation while others slumber. The muscle of volition may act, while there is no consciousness of will. Even the organs of the voice and of progression may perform their office while the sensorium is deeply locked in sleep.

"The two lives are born at different periods, and the one is in active operation before the other is even in existence. The first action observable in the embryo is a minute pulsating point. It is the young heart propelling its infant stream. Before brain, or nerve, or muscle can be distinguished, the heart is in existence and in action; that is, the apparatus of the organic function of the circulation is built up and in operation before there is any trace of an animal organ. Arteries and veins circulate blood, capillary vessels receive the vital fluid, and out of it form brain and muscle, the organs of the animal, no less than the various substances that compose the organs of the organic life. The organic is not only anterior to the animal life, but it is by the action of the organic that existence is given to the animal life. The organic life (*substance*) is born at the first moment of existence; the animal life (*will and mind*) not until a period comparatively distant—the epoch emphatically called the period of birth, namely, the period when the new being is detached from its mother; when it first comes into contact with external objects; when it carries on all the functions of its economy by its own organs, and consequently enjoys independent existence.

"The functions of the organic life are perfect at once. The heart contracts as well, the arteries secrete as well, the respiratory organs work as well, the first moment they begin to act as at any subsequent period. They require no teaching from experience, and they profit nothing from its lessons. On the contrary, the operations of the brain, and the actions of the voluntary muscles, feeble and uncertain at first, acquire strength by slow degrees, and attain their ultimate perfection only at the adult age. How indistinct and confused the first sensations of the infant! Before it acquire accuracy, precision, and truth, how immense the labour spent upon perception! Sensations are succeeded by ideas; sensations and ideas coalesce with sensations and ideas; combinations thus formed suggest other combinations previously formed, and these a third, and the third a fourth, and so is constituted a continuous train of thought. But the infantile associations between sensation and sensation, between idea and idea, and between sensations and ideas, are, to a certain extent, incorrect, and to a still greater extent inadequate; and the misconception necessarily resulting from this early imperfection in the intellectual operations, is capable of correction only by subsequent and more extended impressions. During its waking hours, a large portion of the time of the infant is spent in receiving impressions which come to it every instant from all directions, and which it stores up in its little treasury; but a large portion is consumed in the far more serious and difficult business of discrimination and correction. (*The soul, or immortal part, is developing its powers as the organism of the brain comes to maturity.*)

"The organic life may exist after the animal life has perished. The animal life is extinguished when sensation is abolished, and voluntary motion can be performed no more. But disease may abolish sensation and destroy the power of voluntary motion, while circulation, respiration, secretion, excretion, in a word, the entire circle of the organic functions continues to be performed. In a single instant apoplexy may reduce to drivelling fatuity the most exalted intellect, and render powerless and motionless muscles of gigantic strength; while the action of the heart and the involuntary contractions of the muscles may not only not be weakened, but may act with preternatural energy. In a single instant apoplexy may even completely extinguish the animal life, and yet the organic may go on for hours, days, and even weeks; while catalepsy, perhaps the most singular disease to which the human frame is subject, may wholly abolish sensation and volition, while it may impart to the voluntary muscles the power of contracting with such unnatural energy and continuity, that the head, the trunk, the limbs may become immovably fixed in whatever attitude they happen to be at the moment the paroxysm comes on. In this extraordinary condition of the nervous system, however long the paroxysm last, and however complete the abolition of consciousness, the heart continues to beat, and the pulse to throb, and the lungs to respire, and all the organic organs to perform their ordinary functions. Dr. Jebb gives the following description of the condition of a young lady who was the subject of this curious malady:—

"'My patient was seized with an attack just as I was announced. At that moment she was employed in netting; she was in the act of passing the needle through the mesh; in that position she became immovably rigid, exhibiting, in a pleasing form, a figure of death-like sleep, beyond the power of art to imitate, or the imagination to conceive. Her forehead was serene, her features perfectly composed. The paleness of her colour, and her breathing, which at a distance was scarcely perceptible, operated in rendering the similitude to marble more exact and striking. The position of her fingers, hands, and arms was altered with difficulty, but preserved every form of flexure they acquired: nor were the muscles of the neck exempted from this law, her head maintaining every situation in which the hand could place it, as firmly as her limbs.'

"In this condition of the system the senses were in a state of profound sleep; the voluntary muscles, on the contrary, were in a state of violent action; but this action not being excited by volition, nor under its control, the patient remained as motionless as she was insensible. The brain was in a state of temporary death; the muscle in a state of intense life. And the converse may happen: the muscle may die, while the brain lives; contractility may be destroyed, while sensibility is perfect; the power of motion may be lost, while that of sensation may remain unaffected. A case is on record which affords an illustration of this condition of the system. A woman had been for some time confined to her bed, labouring under severe indisposition. On a sudden she was deprived of the power of moving a single muscle of the body; she attempted to speak, but she had no power to articulate; she endeavoured to stretch out her hand, but her muscles refused to obey the commands of her will; yet her consciousness was perfect, and she retained the complete possession of her intellectual faculties. She perceived that her attendants thought her dead, and was conscious of the performance upon her own person of the services usually paid to the dead; she was laid out, her toes were bound together, her chin was tied up; she heard the arrangements for her funeral discussed, and yet she was unable to make the slightest sign that she was still in the possession of sense, feeling, and life.

"In one form of disease, then, the animal life, both the sensitive and the motive portions of it, may perish; and in another form of disease, either the one or the other part of it may be suspended, while the organic life continues in full operation: it follows that the two lives, blended as they are, are distinct, since the one is capable of perishing without immediately and inevitably involving the destruction of the other.

"And, finally, as the organic life is the first born, so it is the last to die; while the animal life, as it is the latest born, and the last to attain its full development, so it is the earliest to decline, and the first to perish. In the process of natural death, the extinction of the animal is always anterior to that of the organic life. Real death is a later, and sometimes a much later event than apparent death. An animal appears to be dead when, together with the abolition of sensation and the loss of voluntary motion, respiration, circulation, and the rest of the organic functions can no longer be distinguished; but these functions go on some time after they have ceased to afford external indications of their action. In man, and the warm-blooded animals in general, suspension or submersion extinguishes the animal life, at the latest, within the space of four minutes from the time that the atmospheric air is completely excluded from the lung; but did the organic functions also cease at the same period, it would be impossible to restore an animal to life after apparent death from drowning and the like. But however complete and protracted the abolition of the animal functions, reanimation is always possible as long as the organic organs are capable of being restored to their usual vigour. The cessation of the animal life is but the first stage of death, from which recovery is possible; death is complete only when the organic, together with the animal functions, have wholly ceased, and are incapable of being re-established.

"In man, the process of death is seldom altogether natural. It is generally rendered premature by the operation of circumstances which destroy life otherwise than by that progressive and slow decay which is the inevitable result of the action of organized structure. Death, when natural, is the last event of an extended series, of which the first that is appreciable is a change in the animal life and in the noblest portion of that life. The higher faculties fail in the reverse order of their development; the retrogression is the inverse of the progression, and the noblest creature, in returning to the state of non-existence, retraces step by step each successive stage by which it reached the summit of life.

"And now the processes of life at an end, the body falls within the dominion of the powers which preside universally over matter; the tie that linked all its parts together, holding them in union and keeping them in action, in direct opposition to those powers dissolved, it feels and obeys the new attractions to which it has become subject; particle after particle that stood in beautiful order fall from their place; the wonderful structures they composed melt away: the very substances of which those structures were built up are resolved into their primitive elements; these elements, set at liberty, enter into new combinations, and become constituent parts of new beings; those new beings in their turn perish; from death springs life, and so the changes go on in an everlasting circle.

"RELATION BETWEEN THE PHYSICAL CONDITION AND HAPPINESS.—Life depends on the action of the organic organs. The action of the organic organs depends on certain physical agents. As each organic organ is duly supplied with the physical agent by which it carries on its respective process, and as it duly appropriates what it receives, the perfection of the physical condition is attained; and according to the perfection or imperfection of the physical condition, supposing no accident interrupt its regular course, is the length or the brevity of life.

"It is conceivable that the physical condition might be brought to a high degree of perfection, the mind remaining in a state but little fitted for enjoyment; because it is necessary to enjoyment that there be a certain development, occupation, and direction of the mental powers and affections; and the mental state may be neglected, while attention is paid to the physical processes. But the converse is not possible. The mental energies cannot be fully called forth while the physical condition is neglected. Happiness presupposes a certain degree of excellence in the physical condition; and, unless the physical condition be brought to a high degree of excellence, there can be no such development, occupation, and direction of the mental powers and affections as is requisite to a high degree of enjoyment.

"That state of the system in which the physical condition is sound is in itself conducive to enjoyment; while a permanent state of enjoyment is in its turn conducive to the soundness of the physical condition. It is impossible to maintain the physical processes in a natural and vigorous condition, if the mind be in a state of suffering. The bills of mortality contain no column exhibiting the number of persons who perish annually from bodily disease, produced by mental suffering; but every one must occasionally have seen appalling examples of the fact. Every one must have observed the altered appearance of persons who have sustained calamity. A misfortune, that struck to the heart, happened to a person a year ago; observe him some time afterwards; he is wasted, worn, the miserable shadow of himself; inquire about him at the distance of a few months, he is no more.

"THE DIVISION OF HUMAN LIFE into periods or epochs is not an arbitrary distinction, but is founded on constitutional differences in the system, dependent on different physiological conditions. The periods of infancy, childhood, boyhood, adolescence, manhood, and old age, are distinguished from each other by external characters, which are but the outward signs of internal states. In physiological condition, the infant differs from the child, the child from the boy, the boy from the man, and the adult from the old man, as much in physical strength as in mental power. There is an appointed order in which these several states succeed each other; there is a fixed time at which one passes into another.

"In Mr. Finlaison's report, printed by the House of Commons on the 30th of March, 1829, there are six original observations on the mortality of as many separate sets of annuitants of the male sex.

"From an examination and comparison of these observations, it appears—1st. That the rate of mortality falls to a minimum at the close of the period of childhood. 2nd. That from this point the mortality rises until the termination of adolescence or the commencement of adult age. 3rd. That from the commencement of adult age the mortality again declines, and continues to decline to the period of perfect maturity. And, 4th. That from the period of perfect maturity, the mortality rises, and uniformly, without a single exception, returns, at the age of forty-eight, to the point at which it stood at the termination of adolescence. These results clearly indicate that certain fixed periods are marked by nature as epochs of human life; and that at the date of the recorded facts which furnish the data for these observations, and as far as regards the class of persons to which they relate, the age of forty-eight was the exact point at which the meridian of life was just passed, and a new epoch began.

"The observation is founded on the large mass of 9,347 lives and 4,870 deaths. From this observation, it appears that, at the age of thirteen, the mortality out of a million is 5,742. At the age of twenty-three, it is 15,074, being 9,332 more than at the close of childhood. At the age of thirty-four, the period of complete manhood, it falls to 11,707, being 3,367 less than at the close of adolescence. At the age of forty-eight, the mortality returns to 14,870,—all but identically the same as at twenty-three, the adult age. From the age of forty-eight, when, as has been stated, life just begins to decline from its meridian, the mortality advances slowly, but in a steady and regular progression. Thus, at the age of fifty-eight it is 29,185, being 14,315 more than at the preceding decade, or almost exactly double. At the age of sixty-eight, it is 61,741, being 32,556 more than at the preceding decade, or more than double. At the age of seventy-eight, it is 114,255, being 52,514 more than at the preceding decade. At the age of eighty-eight, it is 246,803, being 132,548 more than at the preceding decade.

"During the first year of infancy, as has been shown, the mortality out of a million is 180,492. At the extreme age of eighty-four, it is 178,130, very nearly the same as in the first year of infancy. Greatly as the mortality of all the other epochs of life is affected by country, by station, by a multitude of influences arising out of these and similar circumstances, yet the concurrent evidence of all observation shows that at this and the like advanced ages the mean term of existence is nearly the same in all countries, at all periods, and among all classes of society. Thus, among the nobility and gentry of England, the expectation of life at eighty-four is four years: among the poor fishermen at Ostend, it is precisely the same. M. Deparoieux, who wrote just ninety years ago, establishes the expectation of life at that time in France, at the same age, to have been three and a half years: and Halley, who wrote 120 years ago, and whose observations are derived from documents which go back to the end of the seventeenth century, states the expectation of life at eighty-four to be two years and nine months.

"From these statements, then, it is obvious, that from the termination of infancy at three years of age, a decade of years brings childhood to a close, during which the mortality, steadily decreasing, comes to its minimum. Another decade terminates the period of adolescence, during which the mortality as steadily advances. A third decade changes the young adult into a perfect man, and during this period, the golden decade of human life, the mortality again diminishes; while, during another decade and a half, the mortality slowly rises, and returns at the close of the period to the precise point at which it stood at adult age. Thus the interval between the period of birth and that of adult age includes a term of twenty-three years. The interval between the period of adult age and that when life just begins to decline from its meridian, includes a term of twenty-four years: consequently, a period more than equal to all the other epochs of life from birth to adult age is enjoyed, during which mortality makes no advance whatever. The term of years included in the several epochs that intervene between birth and adult age is rigidly fixed. In England, for example, the expectation of life at the present day, for the mass of the people, as compared with that of the mass at Ostend, which, as has been shown, is the same as that of the whole of Europe, is as follows:—

At birth	.. 41½	years.	At 32	.. 32	years.	At 57	.. 16	years.
12	.. 46¾	,,	37	.. 28¾	,,	62	.. 13	,,
17	.. 41½	,,	42	.. 25½	,,	67	.. 10½	,,
22	.. 38⅜	,,	47	.. 22¼	,,	72	.. 8	,,
27	.. 35¼	,,	52	.. 19	,,	77	.. 6	,,

"It should be borne in mind, that the females of the mass exceed in duration the lives of the males at every age by two or three years.

"The following may be assumed as the maximum average duration of human life' of both sexes collectively:—

50 Yrs.	55 Yrs.	60 Yrs.	65 Yrs.	70 Yrs.	75 Yrs.	80 Yrs.	85 Yrs.
23	19	16	13	11	8	6	3"

Dr. Horner, in "Three Letters addressed to a Non-Medical Friend," gives a very plain account of the absorbent lymphatic system, which I quote. The letters were addressed to myself.—J. S.

"Allow me, in brief recapitulation, to bring again before you the principal circumstances and facts which are more fully given in the volume alluded to, (*On the Nature of the Water Cure*). I again say, be not impatient of repetitions, as long as they bring before you useful and important knowledge: it serves the purpose of riveting it more firmly in your mind.

"You remember that I stated that mastication of food is the commencing part of the process of digestion; and that due care should be taken to make it as perfect as possible. I alluded to the value of good teeth, and to the proper use of them in slow and careful mastication of food. Again, I pointed out the source, the use, and the solvent power of the saliva, or spittle, in its mixing with the food, and in preparing it for the further action of the gastric juice in the stomach. You recollect, dear sir, that the food undergoes the first great change of its nature in the stomach, and *there* it becomes *chyme*, according to technical language. The word is Greek, and means a juice or fluid mass. It remains in the healthy stomach an average time of two or three hours, subjected to the specific action of that organ and its secretion, the much-talked of *gastric juice*. When it is fitted for the next movement downwards, the *chymous mass* passes through the lower opening of the stomach, called the pyloric orifice. We have here again a Greek word for the part, namely, *pyloros*, which means a *porter* or *doorkeeper*. The term is good, for no matter is allowed by it to pass forwards into the first bowel unless it be in a proper state for it. The *pyloros*, or *pylorus*, is usually very vigilant; that is, it is very sensitive. Indeed, it is endowed with an elective power suitable for its important office. Through this sensitive and elective power it will raise a commotion in the stomach, and cause vomiting, when anything of very important nature presents itself for admission into the first bowel, called the *duodenum*. This term, I told you, is of Latin origin, and means *twelve;* because, say the anatomists, its length is about twelve inches.

"Respecting this elective power, or peculiar sensibility of the pyloric orifice of the stomach, I have to apprise you that it is frequently much deranged and destroyed by the intemperate use of stimulants; so that it loses its healthy condition, and then allows improper matters to pass into the small bowels, to interfere with their important function, and thus to cause unhealthy chyle. Frequently also, from the same cause of intemperance, especially in the use of undiluted spirits or dram-drinking, this pyloric orifice becomes the seat of incurable and fatal disease, namely, schirrus or cancer. Under this disease the sensibility is morbidly increased, and constant vomiting takes place as soon as the contents of the stomach reach it for admission into the duodenum. On examination of such cases after death, I have usually found the part ulcerated, but this does not always take place. Napoleon Bonaparte died of this disease; but he had an hereditary predisposition to it from his father, who also died of it. Napoleon had too much shrewdness, common sense, and love of life to stultify himself by those habits which so often cause cancer of the pyloric orifice of the stomach.

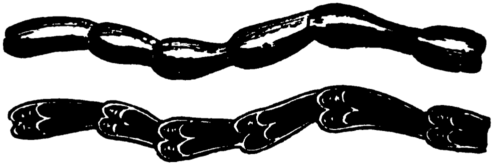
"When the alimentary mass has passed into the duodenum, it is called *chyle* by nearly all physiologists. This is also a Greek term, meaning *juice*, or *sap*, or *fluid squeezed out*. I have ventured, on just grounds, I think, to continue the name of *chyme*, for reasons given in the other book. However, it does not much matter about the name. You must keep in mind, however, that the mass undergoes great change in the duodenum, where it meets and is mixed with two other fluid secretions of particular properties. One is the bile, which is brought from the liver by a duct or canal; the other fluid is the *pancreatic juice*, brought from the *pancreas* by another duct. Besides these two fluids or secretions, there is also the special fluid which is secreted or formed by the lining membrane of the duodenum, and which is of a very solvent nature. The alimentary mass soon passes onwards into the next part of the bowels, called the *jejunum*, a name given from the Latin, and meaning *fasting*, because the bowel is always empty on dissection, after death. The mass is next passed forwards into the *ilium*, the next and last of the small bowels. These are so called because of their comparatively small dimensions. In the two latter ones, the jejunum and ilium, is chiefly absorbed from the alimentary mass the *milk-like* fluid to which alone I would apply the term *chyle*, and not to the whole mass from which it is taken, as do other physiologists. This chyle is absorbed by the absorbent vessels which in this place and office are denominated *lacteals*, because of their *milk-like* contents, which they absorb from the alimentary mass. I shall say more about these lacteals anon. Here we must leave the remaining mass, which takes its course downwards into the larger bowels called the cœcum, the colon, and the rectum. You must keep in mind that the soluble or fluid part of this alimentary mass is absorbed by veins into the blood; whilst the insoluble matter, chiefly, is passed onwards and downwards. This absorption is not, however, to the extent that some writers would have us to suppose. I would just remind you that the liquid part of the fæces, or excrementitious matter, is chiefly secreted from the blood on the internal surface of the large intestine called the colon, where the fæces are first formed.

"To return to the lacteals or lacteal absorbents. The chyle is the nutritious part of the alimentary mass, the essence of aliment. It is conveyed from the small intestines by these lacteals to a kind of oval-shaped bag, the reservoir of the chyle, and therefore called, in technical language, the *receptaculum chyli*. It rests on the front of the spine of the loins, and receives or is formed by the termination of the large trunks of these lacteals, and the trunk of the lymphatic absorbents of the lower extremities. In this reservoir or receptacle, the chyle and the lymph carried by the lymphatics are mixed together. At its upper part it is formed into a large tube or duct, and then takes the name of *thoracic duct*, because its principal course is within the *thorax* or chest. It ultimately delivers its contents into the part of union between the left subclavian and the left jugular vein; and, being mixed with the venous blood, it soon arrives at the right side of the heart; and then into the lungs, to be there exposed to the assimilating influence of the oxygen of the atmospheric air inhaled.

"Let us glance at the effects of excessive eating on the human system in another direction. I mean the excess of *nitrogenous* or *azotized* elements. When the supply of such food becomes much beyond the wants of the system for the renewal of the muscular, nervous, and cellular tissues, you must not suppose that it can, in any way, be stored up in solid flesh, in the manner that non-nitrogenous food causes fat to be stored up. You must bear in mind that the increase of muscular substance depends on the exercise of the muscles. Certainly this increase cannot take place without a proportionate supply of plastic elements of food; but do remember that no degree of richness of blood, or amount of proteine plastic elements, can produce increase of muscular substance and muscular power. Remember that any accumulation of such nutritive matter in the blood can serve no purpose but that of evil, and to produce disease.

"We are constantly witnessing the fact that those who indulge in what is called high living, as to quantity and quality of food, are proportionately liable to disease and death. Those organs of the body which can serve, in a limited degree, to relieve it of excessive fulness and richness of blood through their functions of excretion, become disordered and diseased from excitement and over-action; especially the liver and the kidneys, the liver excreting hydro-carbonaceous elements, and the kidneys those of a nitrogenous nature. Of the catalogue of evil consequences are to be reckoned rheumatism, gout, apoplexy, and palsy, and various inflammatory diseases; and life itself is placed on a slippery foundation. Thus, dear sir, we too often see the advantages of riches insanely overbalanced by the things they are made to bring upon their possessors, whilst the sons and daughters of poverty and want have often the compensating blessings of health and long life. I need not tell you that not one of a thousand of the latter class duly appreciates the advantages he enjoys; for it is more of necessity than of choice that he is in such relation to the means of them.

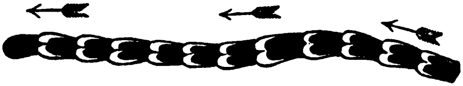
"The instrumentality or apparatus of the absorbent function has been termed *general* and *special*. Blood-vessels and membranes are the general apparatus. The special apparatus consists in a certain system of vessels exclusively for the purpose; these are the lacteals and the lymphatics; having also a certain system of glands in connexion. The lacteal absorbents have been already mentioned by me, as the means of removing the nutrient part of the food from the small intestines to the thoracic duct, by which it is conveyed, mixed up with the lymph, to be commingled again with venous blood; and, after due assimilation in the lungs, to constitute the nutrient part of arterial blood, for the purposes of nutrition. The lacteals are the special absorbents for their important office, as noticed above, and they arise from the internal surface of the small intestines. I wish you to keep in mind, dear sir, that the other special absorbents, the lymphatics, which carry a *water-like* fluid (and hence their name of *lymphatics; lympha* is a Latin word for water), are to be found in every tissue, both of the internal and external parts of the body. The structure of both kinds of absorbents is very similar to that of the veins, which also act as absorbents, in addition to their office of carrying dark and impure carbonised blood. The coats of the veins, however, are thicker and not so transparent as those of the lacteals and lymphatics. Here you have a view of an absorbent vessel in its internal and external surfaces.



A magnified view of an absorbent vessel. 1 represents the external surface, with the jointed appearance produced by the valves. 2 represents the same vessel laid open, showing the arrangement of the valves.

"When these absorbents are fully distended by their contents, they have a jointed appearance, as you see here. The point of each joint is caused by a pair of valves on the internal surface. Here, again, dear sir, is sunbeam evidence of design. These valves are evidently for the purpose of preventing the reflux or backward motion of the fluid within. You recollect that the same means answers the same end in the structure of the veins, and especially in the large ones of the lower extremities. It is this which gives a knotted appearance to the veins of some people, who suffer from varicose legs.

(The following engraving [B] shows the structure of the veins, with the provision to prevent the return of the blood in the same veins. It will be noticed that there is a perforation in the centre of the valve, and on the blood being forced back, it presses on the sides, and closes the centre perforation.—J. S.)



B

"Allow me to state to you further on this point, that the veins and absorbents have not, like the arteries, an impelling engine, as the heart, to force forwards their contents; therefore they need and have the auxiliary means of valves. The arteries have no valves, because they receive the impulse of the heart, with which they are connected at their outset in the aorta. They have, besides, an inherent power of circulating their own contents, arterial blood, which is the oxygenised, nutritious, and scarlet-coloured vital fluid.

"Doubtless, the lymphatic absorbents arise from every part of the body. I wish you to keep in mind that although, like veins, they anastomose with or open into each other, they do not, like them, proceed from small to larger branches, and from these branches to form large trunks. The absorbents, remember, continue of about the same size in their whole length, from their origin to their termination. Remember, also, that the chief of these lymphatic vessels are arranged in two orders or sets; one of them is on the external surface of the body, the other is disposed in a deeper course, and more especially to accompany the large trunks of blood-vessels.

"It is of importance that you remember that every lacteal and every lymphatic absorbent of the human body goes, in some part or other of its course, through the absorbent glands. These are called *conglomate*, in contradistinction to others called *conglomerate* glands, which are made up of a congeries or collection of smaller ones; whereas, these are single or one in substance. I must apprise you that the absorbent glands are small and usually oval-shaped bodies, and are enclosed in a membranous covering. I give a magnified view of them below.

"The glands of the lacteal absorbents, you recollect, are also called *mesenteric glands*, because they are located in the large and powerful membrane, the *mesentery*, which has its name from its principal office of retaining the intestines in their proper position. On page 378 I present you with a view of the absorbent glands of the lacteals, with part of the small intestine, and the receptaculum chyli, with the thoracic duct, &c.

"The glands of the lymphatic absorbents are of various sizes, and are placed in certain appropriate parts of the body. They are sometimes single, but more frequently they are in groups or masses, as in the axillæ or armpits, and in the groins, at the bending of the knee, and under the jaw-bone. They readily enlarge from irritating causes. When an absorbent gland inflames and enlarges, it is called a *bubo*, in professional language, which, in Greek, means a *swelling*.

Fig. I.

Fig. I.—1. Absorbent vessels, called *vasa inferentia*, entering (2) the gland. 3. Absorbent vessels emerging from the gland, called *vasa efferentia*, and forming (4) a common trunk.

Fig. II.—1. Trunk of absorbent vessel entering a gland. 2. Gland apparently composed entirely of convoluted vessels. 3. Vessels emerging from the gland, and forming (4) a common trunk.

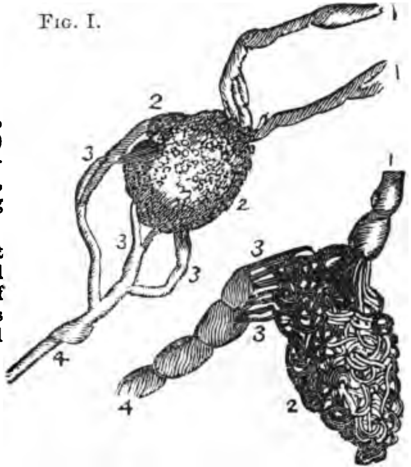


Fig. II.

"The absorbent vessels which enter a gland are termed *vasa inferentia*, or in-going vessels. These enter at the part of it most distant from the heart. Again, those which leave it are termed *vasa efferentia*, or out-going vessels, and are seen to emerge on the side next to the heart, and are fewer in number than those which enter it. The whole substance of an absorbent gland appears to be made up of the *vasa inferentia* convoluted or rolled up on each other, and having free communication with each other.

Fig. III.

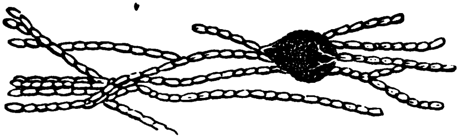
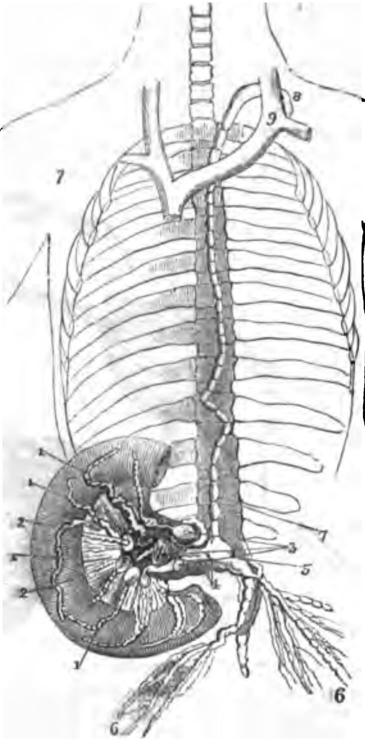


Fig. III.—Small lymphatic vessels passing their contents through a gland.

"Although, as I have already stated, the absorbents have no impelling organ to send forwards their contents, yet the fluid they contain is known to move onwards with considerable force; and we reasonable suppose, therefore, that they possess a vital and inherent power for the purpose.

"Again I counsel you, dear sir, to remember the particular facts and circumstances noticed by me in this brief account of the absorbent system; for, assuredly, the subject has a constant bearing on the health and disease of the human body; and for success of treatment the practitioner must understand and



1. Lacteal vessels emerging from the mucous surface of the intestines. 2. First order of mesenteric glands. 3. second order of mesenteric glands. 4. The great trunks of the lacteals emerging from the mesenteric glands, and pouring their contents into (5) the receptacle of the chyle. 6. The great trunks of the lymphatic or general absorbent system terminating in the receptacle of the chyle. 7. The thoracic duct. 8. Termination of the thoracic duct at (9) the angle formed by the union of the internal jugular vein with the subclavian vein.

VIEW OF THE COURSE OF THE THORACIC DUCT, FROM ITS ORIGIN TO ITS TERMINATION.

think of it. There are yet other and very interesting particulars which I must next bring before you. If I refer again to some things already mentioned, the repetition will serve, I say, to impress your mind more deeply on useful knowledge.

"Mark, then, in reference to the special office of the lacteals to absort chyle from the alimentary mass in the small intestines, that they scarcely ever absorb any other fluid matter, to whatever extent it may be presented to them. These lacteals, then, are endowed with a *special sensibility* for their purpose, and which makes them refuse to take up anything but chyle. You may call it a *nervous power of election.* But this, dear sir, is one instance of the like innumerable ones in the human system, where *special sensibility* belongs to organs and parts for their *special purposes;* and is, indeed, beyond the power of the greatest intellect to understand. It is a part of the wonderful endowments which are absorbed in the animal economy; but no more is known of them. They are truly of the greatest moment for health, and for life itself. I shall again meet with this subject in pursuing our principal ones of health and disease, and its treatment; and I think that I shall have the opportunity of giving you further illustration of it.

"The lymphatics which are distributed over the whole human frame are not limited to the absorption of a certain fluid, as the lacteals are. The lymphatics absorb matters of various kinds, but it is always of an organized nature, and passing through its stages of purification or fitness for the purposes of life. It was formerly believed that the contents of lymphatics were of a refuse nature, but this is now found to be erroneous.

"The absorbent glands are supposed to exert a certain influence on the fluids which flow through them in the absorbent vessels, and to assimilate those fluids more nearly to the nature of the blood. That they do exert a power of altering the nature of such fluids is supported by the fact that the injection of even bland fluids directly into the blood, without their passage through these glands, is often of most serious consequence: even fatal effects have followed.

"There are two organic functions of the human body, of which I have not written to you, dear sir. They are ever in intimate relation with the chief subjects of these letters. In meeting with the names of these two processes, non-medical readers are frequently puzzled to understand their true nature and different uses. I allude to secretion and excretion. I can only undertake, in my limited space, to make a few brief remarks concerning them, yet it will suffice for the end in view.

"The word *secretion* is from the Latin word *secreno*, to separate, to sever, to put asunder or apart. The entire matter of the human body is literally secreted or formed from the blood, which is formed from food, with the aid of air, water, heat, electricity, and light. These things have been repeatedly explained to you. But the term *secretion* is used in a more special sense, and is applied to certain matters, both fluid and solid, which are secreted or formed by certain parts of the body, called *secreting organs* or *instruments*. The principal ones are glands of various sizes, and for various purposes; and serous and mucous membranes also form extensive secreting surfaces, which perform functions of great importance for the health and well-being of the animal economy.

"I must not forget to tell you that the word secretion was first used on the erroneous supposition that it was literally and only a separation of different matters from the blood, in which they existed. The truth is, that they are formed or elaborated out of its constituent elements. The liver secretes, or elaborates, or forms bile from the carbonized and impure venous blood, which is carried through it for the purpose. Again, the breasts of the mother secrete or elaborate milk from the nutritious arterial blood circulating through them for the purpose. The stomach, by the apparatus on its lining membrane, secretes the gastric juice. The kidneys secrete urine. The salivary glands in and around the mouth secrete saliva. The wax of the ear is secreted by a suitable apparatus on its internal surface.

"You must keep in mind that all matters, fluid and solid, which are produced to serve some useful purpose in the human body, are the products of secretion. And mark you all matters which are separated from the body, to be removed as useless or noxious, are also the products of secretion. But they are called *excretions*, because they are separated from the organized substance of the body by similar processes, for the purpose of their removal from the system. Excretion is a particular form of secretion. The distinguishing difference between the two processes is, that in excretion the matter separated is either noxious or useless, and must be removed from the body; the matter separated by secretion has to serve some useful purpose in the body.

"I cannot explain to you the real nature or mode of performance of secretion; for, like that of many others of the animal system, it is unknown. It is certainly performed by the joint means of arteries, veins, nerves, and absorbents. The chief agency is, doubtless, that of the *nervous power*, and may be of a modified kind for the purpose. Membranes become the seat of secretion, and we see a great variety of its products. The membranes which line the large and closed cavities of the human body are termed *serous membranes*, because the fluid which they secrete, and which preserves their proper and moistened condition, is *serum*. I mean the cavities of the chest and of the abdomen.

"Again, there is the *synovial membrane*, which lines the interior surface of the joints, and secretes *synovia*, a glairy fluid which is useful and necessary for locomotion.

"Then, you must consider the most extensive membrane of the body, which is called the *mucous membrane*. It lines the open cavities and canals of the body—the mouth, the stomach, and intestines; also the air-passages and the lungs. This mucous membrane secretes mucus, which adheres to its surface, and keeps it in a suitable state of moisture.

"An Italian physiologist called Malpighi, and another called Ruysh, who flourished at Amsterdam at the same time, and Müller of Berlin, all these narrowly investigated the minute structure of the secreting apparatus, and formed certain doctrines on the nature and uses of secreting sacs, and follicles, and tubes: but they differed in their opinions. Nevertheless, it is established now, that follicles, cells, and tubes constitute the principal apparatus of secretion, with some variety of arrangement of the same.

"Sometimes the apparatus or means of secretion consists in simply extended membrane; and a fine network of minute or capillary arteries, nerves, and absorbents is stretched over its secreting surface; and by the specific action of these the matter secreted is separated from the blood.

"Yet you are to keep in mind, that there are the other forms of apparatus for the purpose, namely, cryptæ, or small pits; follicles, or small bags; cœca, or small pouches; tubuli, or small tubes; which also serve for retaining the matter for a while, to be supplied according to the wants of the system.

"When these cryptæ, follicles, cœca, and tubuli are collected into close contact, and have their necessary arteries and nerves inclosed with them in a common membrane, and as one mass, they constitute a secreting gland. You are to consider a secreting gland as a collection of these secreting bodies connected by cellular tissue, and enveloped in a common membranous covering, and thus forming a distinct organ of secretion. Such are the liver, the pancreas, the spleen, and the kidneys.

"There are very many interesting particulars in connexion with the present subject; but my limited space allows not of further particularisation. I must not leave it, however, without some notice to you of the extent of secreting apparatus. Think, that wherever nutrition is carried on, there, also, is secretion and its apparatus. The extent cannot be correctly stated. All the internal surfaces are studded with secreting bodies. The skin is covered with them, for the secretion of insensible perspiration; also for that of the oily matter which gives to it its softness. Again, the hairs are produced by a secreting process. But further, think of the great organs of the body, the liver, the lungs, the pancreas, and spleen: also the brain. Again, think of the organs of the senses, the eyes, the nose, the tongue, and the ears: nay, every point of the body, and even the bones, have innumerable organs of secretion.

"I wish you, dear sir, ever to keep in mind, that the great and indispensable agent in this process or function of secretion is *organic nervous power:* this is undoubted. Just, in familiar illustration of the fact, let me call your attention to what you are already aware of. You know that the sight, and even the thought itself, of agreeable food, fills the mouth with a secretion of saliva; in common parlance, it *makes the mouth water*. Again, music or agreeable society at dinner, or other meal, increases the appetite, and favours digestion. You well know, and I well know from experience, that disagreeables of any kind, affecting the mind through the brain and nerves of animal life, and, through these, the nerves of organic life, destroy the appetite of the most hungry man: the secretion of gastric juice is excited by the causes of agreeable kind, whilst it is arrested by the contrary.

"Again, you well know that grief causes a flow of tears; in other words, it causes an increased secretion of tears by the lachrymal glands. Fear will cause an increased secretion of urine. But, above all, how often have I known the fine maternal feelings which bind woman's heart to her offspring called into active exercise by the cry of her child! That cry, or the sight of her child, will at once fill her breasts with milk. Nay, it is a well-known fact, that the woman of strong maternal feelings has had the secretion of milk produced by an infant's cry when she has heard it in after years, and long past her own period of child-bearing.

"The imagination can effect secretion. Dr. S. Smith mentions the case of a female who had a great aversion to calomel. She was taking it in minute doses, unknown to herself. She was told of it, and was immediately salivated. On being persuaded that she had not taken any, the salivation ceased. Again she was told that she was taking it, the salivary glands were again excited to excessive action and salivation. In proof that it was purely the work of imagination, there was no redness of the gums or swelling of them, which always is the case in the action of calomel.

"Allow me, dear sir, to conclude this very interesting subject of secretion, to which your earnest letters have led me, by a few remarks on another point which crosses my mind regarding it. I cannot give you any satisfactory explanation of it; but how is it that, from the same vital fluid, the blood, the same kind of secreting apparatus produces the secreted matters according to the specific purposes to be served by them; and produced, too, by the same nervous power? How is it, I mean, that the breasts of the mother secrete the bland and nutritious fluid called milk, which is so suitable for infancy, and not another fluid? How is it that the liver secretes bile, and not urine? or how that the kidneys secrete urine and not bile, and so on? These are of the many *arcana*, the secret things of animal organization, which no human mind will ever penetrate. However, in reply to such questions, we may point to a difference of structure or texture of those several organs of secretion. Nevertheless, there is a cause which is, doubtless, beyond the ken of man. We see enough, however, to fill us with adoring admiration of that wisdom which is infinite, and of that design and beneficent care which incessantly provides for the well-being of man.

"We must now take a very brief consideration of the other function, namely, *excretion*. I have already informed you that this is only a particular form of *secretion*. Different matters contained by organized bodies, vegetable and animal, are continually thrown off by them to enter into other combinations, and to constitute part of the matter of the external world around us. Such rejected matters of the human body are called *excretions*. The function for the purpose is that of *excretion*.

"I must aim at the strictest brevity in treating of this form of secretion. I keep before my mind's eye the essential points in closest connexion with the chief subjects of these letters on health, disease, and its treatment. I aim at a statement of such things as bear most for illustrating these to your non-medical mind.

"There are five organs, dear sir, belonging to the human body, which may be said to be decidedly excretory in their functions; that is, which serve the purpose of separating those matters which are termed excrementitious, and which are useless, and which become noxious to the body if they be retained beyond a due time. These organs are the intestines, the kidneys, the lungs, the liver, and the skin. You know quite well that they have other purposes to serve besides; yet this one of *excretion*, for the removal of improper matters from the body, becomes an important one.

"I need not describe to you the minute anatomy of the skin; but, really, I cannot easily overrate the importance of its different functions, and more particularly of those of *excretion*, for which its structure is well adapted. I just remind you here that it is composed of three layers or coats; the internal one is called the *cutis vera*, or true skin, of which I have already treated. The middle layer is called the *rete mucosum*, or mucous network; and it is most conspicuous in the negro, in whom it becomes the seat of colour. On the external surface of the *cutis* there is a particular and complex network of blood-vessels, nerves, and absorbents. These nerves are of both kinds, both *organic* and *animal*, that is, both *insentient* and *sentient* nerves. The *organic nerves* give power to the arteries to perform their part in the functions of the skin, and these are chiefly of an excrementitious nature. The supply of *animal nerves* to this *vascular plexus* of the skin gives to it its fine sensibility.

"I mentioned to you before, that the softness of the skin is owing to the oily matter which *sebaceous glands* secrete for the purpose; and on this oily substance depends the peculiar odour of the animal body. This odour becomes variously strong, and very peculiar, in certain states of the nervous system. I have known it more particularly affected in the *insane*.

"But, dear sir, there are certain grounds for supposing that this odour may be various in its quality, beyond our power of conception. I am thinking of the dog, the faithful but often ill-requited companion and friend of man. You know that he at once distinguishes the odour of his beloved master amid the crowd of thousands. He distinguishes by his nose where is the footstep of his master, be it in the crowded city or on the public road.

"I wish you especially to keep in mind that the skin is highly furnished with blood-vessels and nerves, and that it performs most important functions. It performs at least four; three of which are *organic*, and one is *animal*; namely, secretion, excretion, absorption, and sensation. The last-mentioned is the one *animal* function which the skin performs, and which serves, as you know, most necessary purposes.

"The principal excretion of the skin is that of the *perspiration*. This is both *sensible* and *insensible*. The former is commonly called *sweat*, the latter is invisible; but it is constantly going on, so that a great amount of matter passes, in this way, out of the human body every day. You are aware that the sweat, or visible perspiration, is the great means of regulating the heat of the body when it is exposed to a high temperature, especially in tropical climates, and in the hot summer weather of our country. The evaporation of the fluid perspired is a cooling process.

"You must not forget that *carbon* is constantly separated or excreted by the skin from the blood; and thus you perceive that in this action it aids the lungs in their great process of depuration or decarbonization. Remember, however, that another great office of the skin is to relieve the blood of its excess of water, of which hydrogen is the chief element. You see, then, that the three great organs for depurating the blood of carbon and hydrogen are the lungs, the liver, and the skin. They are closely connected in function, so that, under certain circumstances of climate and habits, they become vicarious, that is, they act for each other.

"Let me fix your attention on the extent and importance of the functions of the skin; and especially on the great fact that this extensive organ of four functions is the very appropriate field of operation for the *water cure*. No wonder that this has proved the most efficacious of all curative means ever practised against the diseases of the human body.

"Were it not that the history of the arts and sciences affords so much, and too much, evidence of the unreasonableness of mankind in rejecting and denying the value of the best of discoveries, and which afterwards became of the highest worth and greatest service to the world, one would scarcely credit that the water cure could meet with so much indifference and opposition from educated and professional men.

"As to the excretory function of the lungs, you are already aware of it from your perusal of my other treatise, "*On the Nature of the Water Cure*." Be not impatient of repetition; I will briefly recapitulate. The lungs, you are aware,

are the chief decarbonizing organ of the body. The venous blood, with which are commingled the chyle and lymph, is the carbonized and impure blood which enters the right side of the heart, and by it is sent to the lungs, where the process of decarbonization takes place, through contact with the oxygen of the air inhaled. It is returned from the lungs to the left side of the heart in the character of *arterial*, *oxygenized*, and *vital blood*. It is then sent by it into all parts of the body.

"There are some particulars of great interest connected with this process, which have been proved by the experiments of Dr. Stevens, now of Malvern. I must not enter into an account of them. However, one of the ascertained facts which have been published is, that there exists a strong attraction between oxygen and carbonic acid, whatever may be that between it and carbon. In my next letter I shall have to make further mention of Dr. Stevens and his discoveries in connection with the nature and treatment of cholera; at present, therefore, I abstain from a longer statement.

"I have already mentioned to you the *elective power* of the lacteals. The matters which had been rejected by these lacteals are taken up by the veins and absorbents of the adjoining parts, and are conveyed into the blood which goes by the *vena portæ* to the liver. Now, by the appropriate function of the liver these matters undergo a further and perfect digestion. After this, they are conveyed by a short course to the heart, and thence to the lungs for their assimilation to the nature of arterial blood.

"The liver is an organ of excretion, as you now see, for the substances called carbon and hydrogen, the chief constituents of bile; and they are highly excrementitious; and the more copious the quantity of bile secreted, the larger the amount of carbon and hydrogen taken from the venous blood. Thus, as stated before, the liver is greatly auxiliary to the lungs and the skin in their work of *excretion*, and of necessary depuration of the vital fluid, the blood.

"I have next and only just to notice to you the excretory functions of the kidneys. They have nothing to do with the excretions of the liver, the lungs, and the skin, as far as *carbon* is concerned. The kidneys, you know, secrete the urine. According to the various circumstances of the human system does the quality of this secretion vary in its composition. The special office of the kidneys is to eliminate or extract the highly animal substance called *azote* or *nitrogen*. This, you know, is an elementary ingredient, and a principal substance of their excretion from the body, but not the only one. They have, indeed, a certain relation in their function to that of the skin, in the *watery fluid* which forms so large a part of the urine, and this is always in the inverse proportion of the quantity taken from the system by perspiration of the skin.

"Many different kinds of salts and other matters are to be found in the urine by chemical analysis; but I need not mention them here. The chief matter which characterizes its composition is called *urea*, which is of a highly animalized nature, and the constant excretion of which cannot be interrupted for any length of time without the most injurious and even fatal results.

"The function of the kidneys appears to be the occasional outlet for whatever is not needed in the animal system, and whatever is not of a suitable quality for a passage by the other organs of excretion, or does not find its usual and proper outlet. Often does the bile pass in the urine when the usual passage by the bowels is stopped by disease. The special matter of extraction, I repeat, is *urea* as a proximate principle, and the special elementary substance is *nitrogen* or *azote*.

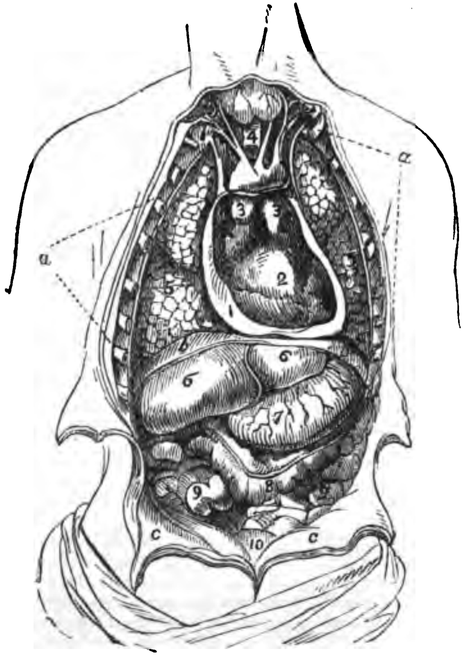
"We will now, dear Sir, briefly consider the object or purpose which is served in the human body by the function of *excretion*. It is soon stated. You are aware that the grand source from which are derived the materials of the body's composition is the blood. It becomes a matter of great moment that this vital fluid be preserved in a state of purity, and adapted for the great purpose of supply of the various tissues, and for the purposes of life and organization. A wrong condition of the blood, by the retention of any matters which ought to be continually removed, becomes rapidly injurious and even fatal to life.

"*Excretion* is the great depurating process of the blood. Firstly, that of the lungs cannot be at all suspended without the worst consequences, which are immediately experienced. The carbon of the venous blood, which ought to be extracted by its combination with oxygen of the atmospheric air inhaled, quickly accumulates, and mixes with the arterial blood. In a minute or two the arterial blood becomes venous, and being carried to the brain, sensibility is first destroyed; then the heart ceases to act, and death ensues. Such is the case in death by hanging, and drowning, and all similar means by which the function of respiration and decarbonization is interrupted.

"If the proper excretion of bile by the liver be stopped, it soon accumulates in the blood, and its deadly properties are experienced in the extreme depression of nervous power. If the usual excretion be not soon re-established, insensibility and death will supervene.

"I have next to apprise you, that if the excretion of *urea* by the function of the kidneys be interrupted for a short time, the blood is thereby rendered putrescent; and very soon the most malignant fever destroys the individual; coma, or stupor, and death are the result of its retention in the vital fluid. This is occasionally seen in the course of certain diseases, and becomes the cause of their fatal termination.

"Further, in regard to the excretion of the skin. You are aware that the internal and external covering of the body, that is, the skin and the mucous

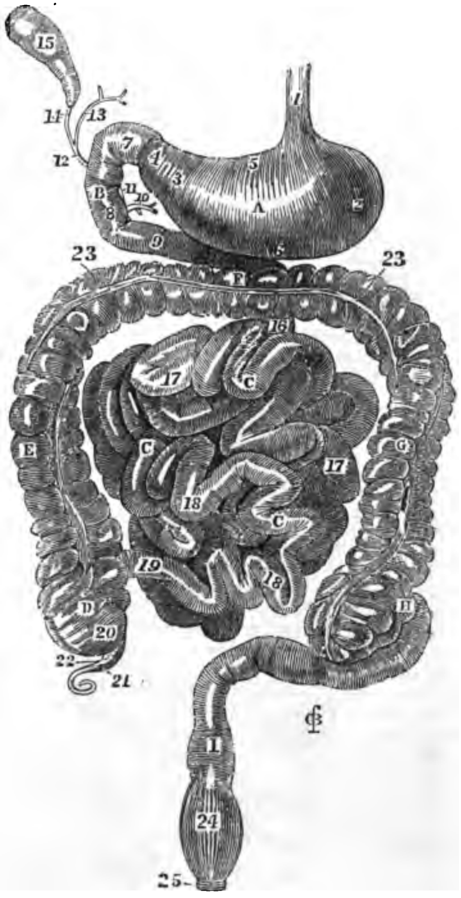


a. The cut edges of the ribs, forming the lateral boundaries of the cavity of the thorax. *b*. The diaphragm, forming the inferior boundary of the thorax, and the division between the thorax and the abdomen. *c*. The cut edges of the abdominal muscles, turned aside, exposing the general cavity of the abdomen. 1. The cut edge of the pericardium turned aside. 2. The heart. 3. The great vessels in immediate connexion with the heart. 4. The trachea, or wind pipe. 5. The lungs. 6. The liver. 7. The stomach. 8. The large intestine. 9. The small intestines. 10. The urinary bladder in the male; the womb occupies the place in the female, and the bladder more to the right side.

membrane of the mouth and intestinal canal, are identical in structure and character; and that the whole difference of their appearance is owing to their difference of position. Hence the close sympathy between them. When the excretion of the skin is suppressed, the internal organs suffer immediately.

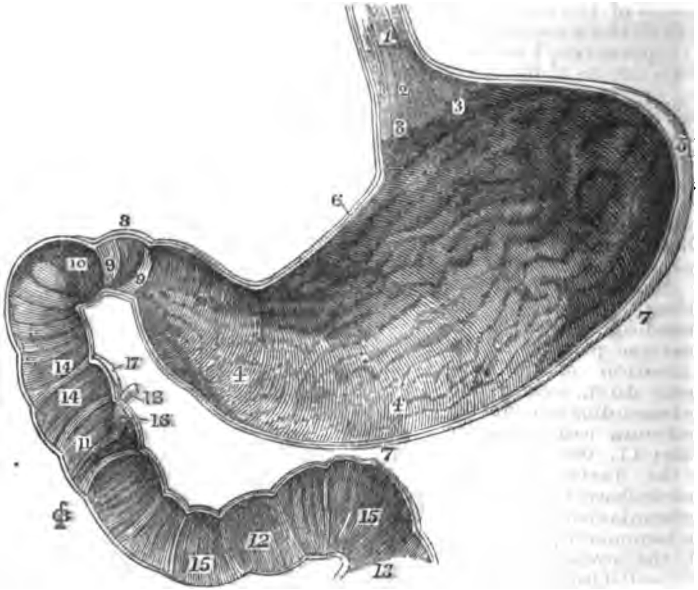
"As to the excretions of the intestinal canal, and the very injurious effects of their suppression, I need not inform you. Such is the importance of a constant and due action of the bowels.

Fig. 1, the æsophagus; 2, the great, or cardiac extremity of the stomach; 3, its lesser, or pyloric end; 4, a constriction corresponding with the pylorus; 5, the superior, or lesser curve of the stomach; 6, its inferior, or greater curve; B, the duodenum; 7, its ascending portion; 8, its descending portion; 9, its transverse portion; 10, the termination of the pancreatic duct, opening into the descending portion of the duodenum near its inferior angle; 11, the termination of the ductus communis choledochus; 12, the ductus communis choledochus; 13, the common hepatic ducts; 14, the cystic duct; 15, the gall-bladder; C, C, the small intestine; 16, the upper part of the jejunum where it is continuous with the duodenum; 17, 17, the jejunum; 18, 18, the ileum, of a lighter colour than the jejunum; 19, the termination of the ileum in the large intestine; D, the cœcum; 20, the cul-de-sac of the cœcum; 21, the appendix vermiformis, connected with the cœcum by a delicate mesentary, 22; E, the ascending colon; F, the transverse colon; G, the descending colon; 22, 23, the longitudinal bands of muscular fibres which produce the peculiar sacculated character of the colon; H, the sigmoid flexure of the colon; I, the rectum, in which the sacculated appearance is lost; 24, some of the longitudinal muscular fibres seen upon the rectum; 25, the sphincter ani.



THE STOMACH, DUODENUM, COLON, SMALL BOWEL, AND RECTUM.—*From Quain.*

"When the function of excretion, by the different organs for the purpose, is duly performed, all is well with the human body. The blood continues pure and healthful in its influence on every organ, and is suitable for the great purposes



A longitudinal section of the stomach and duodenum, showing their internal surface, with the arrangement of the mucous membrane.—*Quain.*

Fig. 1, the lower part of the æsophagus; 2, the cardiac orifice of the stomach; 3, 3, the abrupt border formed by the termination of the cuticular epithelium of the æsophagus at the cardiac opening of the stomach; 4, 4, the rugæ of the mucous membrane; 5, the great end of the stomach, in which the rugæ of the mucous membrane are less marked than in the middle of the organ; 6, the lesser curve of the stomach; 7, 7, the greater curve; 8, the pylorus; 9, 9, two segments of a spiral fold of mucous membrane situated in the pyloric opening; 10, the ascending portion of the duodenum; 11, the descending portion of the duodenum; 12, the transverse portion of the duodenum; 13, the commencement of the jejunum; 14, 14, the first valvulæ conniventes, which are of small size; 15, 15, larger valvulæ conniventes; 16, the papilla, upon which the ductus communis choledochus and pancreatic duct terminate; 17, a part of the ductus communis choledochus; 18, the pancreatic duct near to its termination.

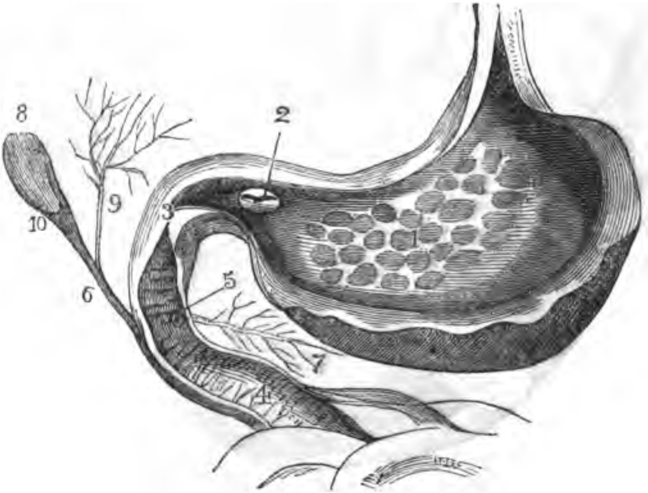
MUCOUS MEMBRANE OF THE STOMACH, SHOWING THE CELLS.

of life. When all is healthful and well with the body, and only then, does it become the suitable tenement and the efficient organ of the soul, to obey its high behests, and to answer its great purpose of devotedness to the service of the infinite and adorable Creator. Do remember the imperative necessity of preserving the health and vigour of your body, if you wish fully to enjoy the only happiness to be found on earth, the happiness of a life devoted to the glory of God."—*End of Letter 1st.*

PERICARDIUM.—The membranous bag that surrounds the heart, and the arterial and venous trunks connected with it. The pericardium consists of two layers, an external or fibrous, and an internal or serous. The serous membrane lines the fibrous one, and is reflected over the heart after the manner of serous membranes in general. Its use is to secrete and contain the liquor pericardii, which lubricates the heart, and prevents attrition between the opposite surfaces of the pericardium.—*Dr. Hooper.*

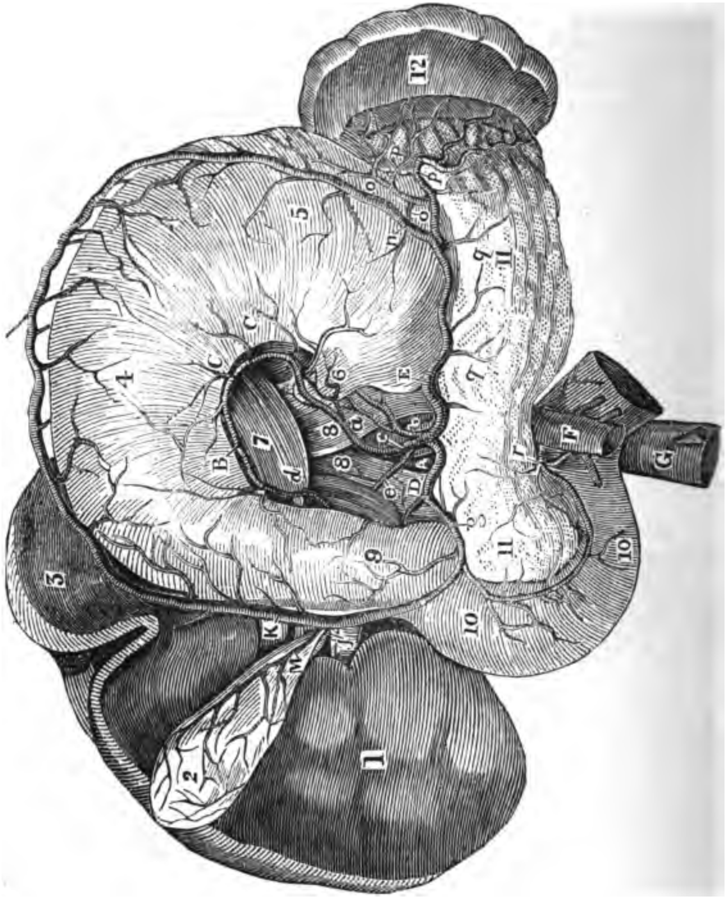
Dr. Smith says, the contents of the abdomen consist of the organs which belong to the apparatus of digestion, and of those which belong to the apparatus of excretion. The organs which belong to the apparatus of digestion are—1. The stomach.—2. The duodenum.—3. The jejunum.—4. The ilium. The three last organs are called the small intestines, and their office is partly to carry on the digestion of the aliment commenced in the stomach, and partly to afford an extended surface for the absorption of the nutriment as it is prepared from the aliment.—5. The pancreas.—6. The liver.—7. The spleen. The three last organs truly belong to the apparatus of digestion, and their office is to co-operate with the stomach and the small intestines in the conversion of the aliment into nutriment. The organs which belong to the apparatus of excretion are—1. The large intestines; consisting of the cœcum.—2. The colon.—3. The

THE STOMACH.



1. Mucous membrane, forming the rugæ. 2. Pyloric orifice opening into the duodenum. 3. Duodenum. 4. Interior of the duodenum, showing the valvulæ conniventes. 5. Termination of, 6. The biliary or choledoch duct. 7. Pancreatic duct, terminating at the same point as the choledoch duct. 8. Gall-bladder removed from the liver. 9. Hepatic duct proceeding from the liver. 10. Cystic duct proceeding from the gall-bladder, forming, by its union with the hepatic, a common trunk, the choledoch.

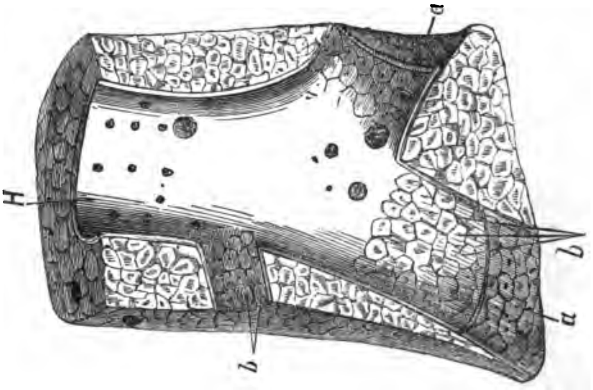
rectum. It is the office of these organs, which are called the large intestines, to carry out of the system that portion of the alimentary mass which is not converted into nourishment.—4. The kidneys, the organs which separate in the form of the urine an excrementitious matter from the blood, in order that it may be conveyed out of the system.



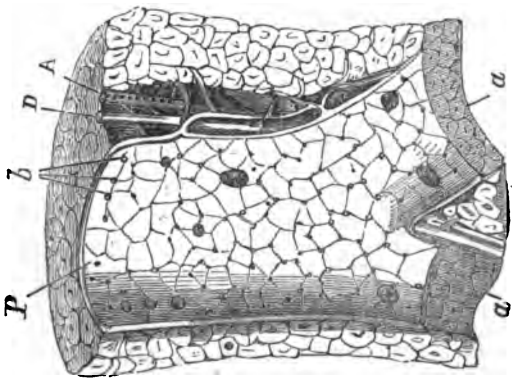
THE STOMACH, LIVER, AND PANCREAS.

The stomach is here shown as it appears when drawn upwards; thus bringing into view the pancreas, duodenum, and spleen, with their respective arteries. 1. The right lobe of the liver. 2. The gall-bladder. 3. The left lobe of the liver. 4. The middle parts of the stomach. 5. Its larger or left extremity. 6. The junction of the æsophagus with the stomach. 7. The lower part of the left lobe of the liver. 8, 8. The crura of the diaphragm. 9. The pylora. 10, 10. The duodenum. 11, 11. The pancrea. 12. The spleen.—*Quain and Wilson.*

The Liver.—Until within a comparatively recent period, the entire functions of the liver have been little understood, and little has been written on the subject. Budd, on the Anatomy and Functions of the Liver, is considered the best work. The liver has been, and is now, too commonly considered with respect to its office, as merely an organ for purifying the blood of the bile or gall, and applying it to the stimulating of the bowels. This is one important office which it performs; but it has other important functions as a blood-making organ, and from this not being taken into account in the treatment of disease, serious errors are committed by giving strong doses of medicine, which so weaken the organ, that its power of forming nutritive matter for enriching the blood is sometimes destroyed. Saccharine matter, or sugar, and the red corpuscles in healthy rich blood, are extensively formed in the liver, and pass into the circulation. When the exhausted blood enters the liver by the hepatic artery, or vein, it has no red corpuscles, but is charged with impurities drawn out of the various tissues, exhausted mucus, and lymphatics; here the blood is subject to a process through the electric power of the ganglionic or nutritive nerves, by which the impurities are formed into gall, and deposited in the gall-

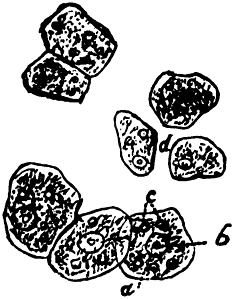


H, longitudinal section of an hepatic vein; *a a*, portions of the canal, from which the vein has been removed; *b b*, orifices of ultimate twigs of the vein, formed by the capillaries of single lobules.

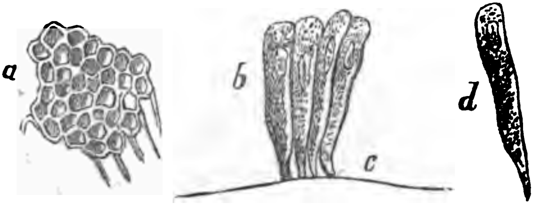


Longitudinal section of a small portal vein and canal. P, the portal vein; A D, the accompanying artery and duct; *a a*, portions of the canal from which the vein has been removed; *b*, orifices of ultimate twigs of the vein springing immediately from it.

bladder, from where it is expelled through the gall-duct, into the duodenum, where it mixes with the digested food and pancreatic juice, from the pancreas or sweetbread, and passes into the bowels, where it acts as a stimulant.—*From Dr. Budd on the Diseases of the Liver.*



Nucleated cells of the liver; *a*, the nucleus; *b*, the nucleolus; *c*, fat-globules; *d*, cells of small size, detached.



Nucleated cells of the gall-bladder, as seen under a high power; *a*, pavement formed by the union and apposition of the cells; *b*, side view of four cells; *c*, the basement-membrane; *d*, a detached cell.

It is not in the liver only that the cells perform this office, for it seems established as a general law, that all true secretion, whether in animals or in plants, is effected by the agency of cells; that, 'however complex the structure of the secreting organ, these nucleated cells are its really operative part.' In each secreting organ, the secreting cells have a peculiar power to form, or to withdraw from the blood, the secretion proper to the part.

On examining these cells of the liver under the microscope, it is seen that most of them inclose small spheroidal globules, which are recognised by their dark outline, or high refractive power, to be globules of oil or fat.

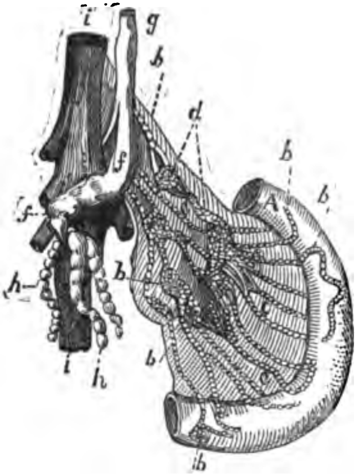
The blood which enters the liver by the hepatic artery fulfils three functions: it nourishes the liver; it supplies the excreting ducts with mucus; and, having performed these purposes, it becomes venous, enters the branches of the portal vein, and contributes to the secretion of the bile. The portal vein fulfils two functions: it conveys the blood from the artery, and the mixed blood to the coats of the excreting ducts. It has been called the vena arteriosa, because it ramifies like an artery, and conveys blood for secretion; but it is an arterial vein in another sense, being a vein to the hepatic artery, and an artery to the hepatic vein. The hepatic veins convey the blood from the lobular venous plexuses into the vena cava inferior.—*Hooper.*

In ordinary livers these oil or fat globules are small, and few in number: but in the fatty condition of the liver so often found in persons dead of consumption, and in that induced by keeping animals exclusively on fatty substances, they are so large and numerous, as to distend the cells to double their natural size, and consequently to cause a great increase in the volume of the liver. The cells at the circumference of the lobule usually contain a larger amount of oil than the cells near its centre.

PANCREAS. (From the Greek,—all, and flesh; so called from its fleshy consistence.) A glandular viscus of the abdomen, of a long figure, compared to a dog's tongue, situated in the epigastric region under the stomach. The prolonged portion at the right extremity has been called *Pancreas Aselli*, after Caspar Aselli, the anatomist. It is composed of innumerable small glands, the excretory ducts of which unite and form one duct, called the pancreatic duct; which perforates the duodenum with the ductus communis choledochus, and conveys a fluid, in its nature similar to saliva, into the intestines. The pancreatic artery is a branch of the splenic. The veins evacuate themselves into the splenic vein. Its nerves are from the par vagum and great intercostal. The use of the pancreas is to secrete the pancreatic juice, which is to be mixed with the chyle in the duodenum. The quantity of the fluid secreted is uncertain; but it must be very considerable, if we compare it with the weight of the saliva, the pancreas being three times larger, and seated in a warmer place. It is expelled by the force of the circulating blood, and the pressure of the incumbent viscera in the full abdomen. Its great utility appears from its constancy, being found in almost all animals; nor is this refuted by the few experiments in which a part of it was cut from a robust animal without occasioning death, because the whole pancreas cannot be removed without the duodenum: for even a part of the lungs may be cut out without producing death, but they are not therefore useless. It seems principally to dilute the viscid cystic bile, to mitigate its acrimony, and to mix it with the food. Hence it is poured into a place remote from the duct from the liver, as often as there is no gall-bladder. Like the rest of the intestinal humours, it dilutes and resolves the mass of aliments, and performs every other office of the saliva.—*Hooper*.

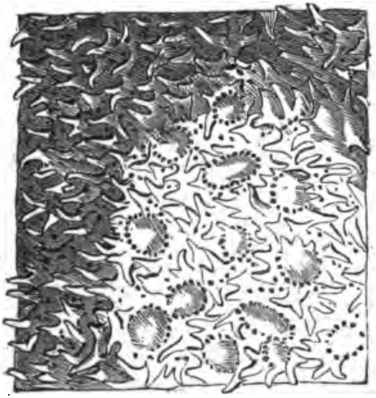
Dr. Smith says, all aliment, but more especially vegetable food, contains a large portion of carbon, more it would appear than the lungs can evolve. The excess is secreted from the blood by the liver, in the form of resin, colouring matter, fatty matter, mucus, and the principal constituents of the bile. All these substances contain a large proportion of carbon. After accomplishing certain secondary purposes in the process of digestion, these biliary matters, loaded with carbon, are carried out of the system, together with the non-nutrient portion of the aliment. In the decarbonizing process performed by the lungs and the liver, the chief difference would seem, then, to be in the mode in which the carbon that is separated is carried out of the system. In the lungs, it is evolved, as has been stated, in union with oxygen, in the form of carbonic acid; in the liver, in union with hydrogen, in the form of resin and fatty matter. Accordingly, in tracing the organization of the animal body from the commencement of the scale, it is found that among the distinct and special organs that are formed, the liver is one of the very first. It would appear to be constructed as soon as the economy of the animal requires a higher degree of respiration than can be effected by the nearly homogeneous substance of which, very low down in the scale, the body is composed. Invariably, through the whole animal series, the magnitude of the liver is in the inverse ratio to that of the lungs. The larger, the more perfectly developed the lungs, the smaller the liver; and, conversely, the larger the liver, the smaller and the less perfectly developed the lungs. This is so uniform that it may be considered as a law of the animal economy. (*See "Composition of Human Body," page* 262.)

The numbers of pounds of oxygen and hydrogen gas in comparison with the numbers of cubic feet, owing to the condensation which these gases undergo when they combine to form water, is immense, as the following extracts from Stockhardt's chemistry will show:—" By the decomposition of water analysed, and by combining together its elements (synthesis), it is proved to consist in volume of one measure of oxygen and two measures of hydrogen, yielding two measures of vapour; in weight, of eight parts of oxygen and one part of hydrogen, yielding nine parts in weight of water." "The great difference between the numbers of the measured and those of the weights depends on the fact that one measure of hydrogen weighs sixteen times less than one of oxygen." Oxygen atomic weights, 8; specific gravity, 1·1; hydrogen atomic weight, 1; specific gravity, 0·068. Hydrogen is the highest of all gases, 14½ measure only weight, as much as 1 of air. "From one measure of water when decomposed into its elements several thousand measures of these two gases may be obtained." The coincidence of the numbers of lbs. of oxygen (111), and water (111), appears to need explanation, 12⅓ hydrogen, 98⅔ oxygen combine to form 111 water, the surplus oxygen and hydrogen are contained in the fat, gelatine, and oxides.



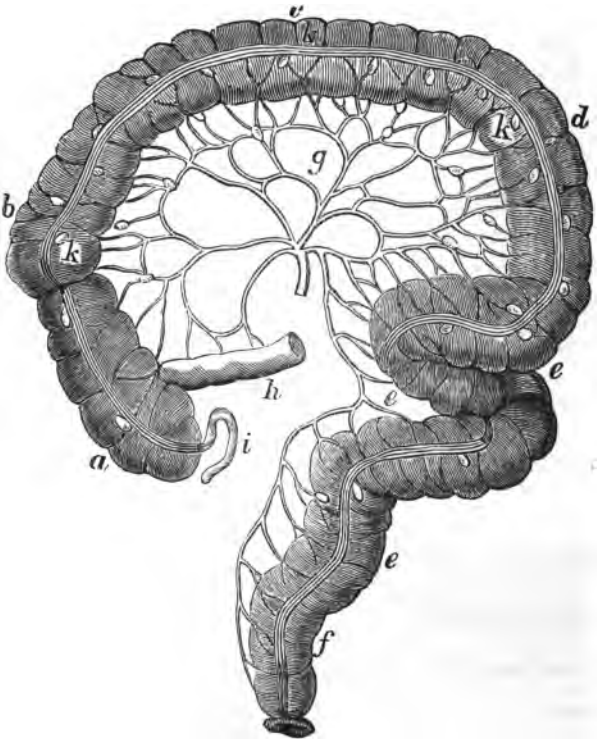
A portion of small bowel attached to the mesentery, showing the lacteals proceeding through the mesentery to convey the nutriment from the bowels to the thoracic duct. The dotted appearance of the lacteals shows the glandular structure, and in these glands the chyle or nutriment undergoes an important change before it reaches the thoracic duct.

A A, a portion of the small intestines (jejunum); *b b b b*, lacteal vessels; *c c c*, the mesentery; *d d*, mesenteric glands; *f f*, the receptacle of the chyle; *g*, thoracic duct; *h h*, lymphatic vessels from other parts of the body; *i*, the aorta.

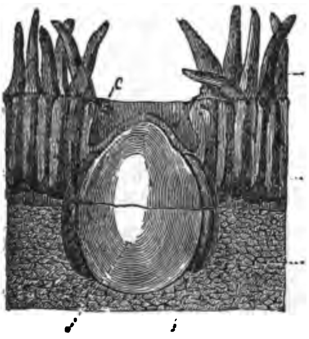


Part of a patch of Peyer's glands from the inside of the small bowel, showing also the intestinal villus, or absorbents which take up the nutriment out of the digested matter or chyme in the bowel, and convey it to the thoracic duct.

One of the solitary glands in the bowel; all these glands either take up matter and change its character, or they give out matter to aid in the processes of assimilation.



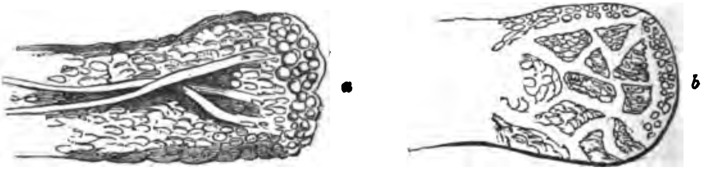
The colon, or large bowel, showing the mesenteric arteries which supply it with blood; *a, b, c, d, e,* the colon, showing the sacculated form and general arrangement; *f,* the rectum; *h,* the small intestine, terminating in the colon, and forming the cœcal valve; *g,* the mesenteric arteries.



Side view of a portion of intestinal mucous membrane imbedded in the submucous tissue. The small points project inside the bowel, and take up the nutriment.

Portion of small bowel attached to the mesentery, with the veins to supply arterial blood.

The small intestinal villus, which, as is seen by the engravings, page 390, projects into the bowel to take up nutriment out of the digested food or chyme, are curiously constructed with absorbent cells at the points, so that they only take up fluid.



Extremity of intestinal villus; seen at *a*, during absorption, and showing absorbent cells and lacteal trunks, distended with chyle; *b*, during interval of digestion, showing the supposed peripheral network of lacteals.

The annexed engraving represents the blood-vessels of an intestinal villus, with the capillaries or minute veins: the larger veins, one carrying nutritive or arterial blood into the mass, the other large vein carrying the exhausted blood back for renewal.

The following is from Dr. Carpenter:—"The duodenum receives not only the pancreatic, but also the *biliary* secretion; and from the constancy with which this fluid is poured into the upper part of the intestinal tube, or even into the stomach itself, in all animals which have any kind of hepatic apparatus, it seems a legitimate inference that this secretion is not purely excrementitious, but serves some important purpose in the digestive process. It is not easy, however, to state with precision what this purpose is. The results of many of the experiments which have been made to determine it, are vitiated by the fact, that the pancreatic duct in most cases discharges itself into the intestinal tube at the same point with the hepatic, and has thus been frequently involved in operations performed upon it.—As the most important constituents of Bile, and the agency of the Liver as an assimilating and depurating organ, will be more appropriately considered elsewhere (CHAPS. IV. and IX.), we shall here limit ourselves to the consideration of what may be regarded as the best-established facts in regard to the uses of the biliary secretion in the digestive process.

"When its action is tested out of the body, by mingling it with the different constituents of food, it is found to exert no change upon starchy substances whilst fresh; though, when in a state of incipient decomposition, it acts upon them as other animal substances do. It has no action upon cane-sugar, until it has stood a considerable length of time; but then it converts it into lactic acid. This change it speedily exerts, as do nearly all other animal substances, upon grape-sugar. It has no action on albuminous substances even when acidulated. And although it will form an emulsion with oleaginous matter, yet the emulsification is less complete than that which is effected by the pancreatic fluid alone.[*] Hence it appears to be deficient in anything at all similar to the peculiar ferments of the saliva, gastric juice, and pancreatic secretion; and its office in digestion must be of a different character from that of either of those fluids. The nature of this office may be partly judged of from what takes place when fresh bile is mingled with the product of gastric digestion. The acid re-action of the latter is neutralized by the alkali of the former, and a sort of precipitation takes place (as was originally noticed by Dr. Beaumont), in which certain constituents of the bile fall down, and in which also (according to M. Bernard) the albuminous matters that have been dissolved, though not yet absorbed, are for a time rendered insoluble, leaving the saccharine matters in solution, and the oleaginous floating on the top. The admixture of the bile with the chyme seems further to have the effect of checking destructive chemical changes in its composition. For M. Bernard found that when two similar pieces of meat had been immersed for three months, one in a bottle of gastric juice alone, and the other in a mixture of gastric juice and bile, a strong ammoniacal odour, resulting from decomposition, was emitted from the former, whilst the latter was pure and free from any smell whatever. And it was remarked by MM. Tiedemann and Gmelin (and also recently by Hoffmann), that when the bile was prevented from passing into the alimentary canal, the contents of the latter were more fœtid than usual. Moreover, it is found that the admixture of bile with fermenting substances checks the process of fermentation; and M. Bernard has shown by ingeniously-contrived experiments,[†] that this antagonistic power is exerted also in the living body. Hence we can understand how the reflux of bile into the stomach should seriously interfere with the process of gastric digestion; and how, when there is a deficient secretion of bile, or more food is swallowed than the bile provided for it can act upon, or the character of the biliary secretion itself has undergone any serious perversion, there should be much more than the normal amount of putrefactive fermentation, as is indicated by an evolution of flatus, and very frequently by diarrhœa. Further, the want of proper neutralization of the gastric fluid will cause the continuance of acidity in the contents of the intestinal canal, which in its turn induces a state of irritation of its mucous membrane, and a perversion of its secretions: and it is one of the beneficial results of 'alterative' medicines, employed to remedy this condition, that, by augmenting the secretion of bile, they tend to reproduce a state of neutrality in the contents of the alimentary canal. Moreover the presence of a proper quantity of bile in the intestine seems to promote the secreting action of the intestinal glandulæ, and also to contribute to maintain the peristaltic movement of the walls of the canal; this appears alike from the tendency to constipation, which is usually consequent upon deficiency of the secretion, and from the diarrhœa which proceeds from its excess; and is confirmed by the purgative properties which inspissated ox-gall has been found to possess.

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[*] Dr. Bence Jones, in the *Medical Times*, July 5, 1851

[†] "Amer. Journ. of Med. Sci.," Oct., p. 351.

"Notwithstanding all its uses, however, it must be admitted that the prevention of the discharge of bile into the alimentary canal is not attended with the deleterious results which might have been anticipated from it; for it has been found by the experiments of Schwann, Blondlot, and Bernard, that if the bile-duct be divided, and a tube be inserted in it in such a manner as to convey away the secretion through a fistulous orifice in the abdominal parietes, the animals thus treated may live for weeks, months, or even years, although they usually die at last with signs of inanition. Of the quantity of bile daily poured into the alimentary canal of man, we have no other mode of forming an estimate, than by observing the quantity poured out from the bile-ducts of animals in such experiments as those just cited. Blondlot found that a dog in which he had established a fistulous opening for the discharge of the bile, secreted from 40 to 50 grammes in the twenty-four hours; whence he inferred that an adult man secretes about 200 grammes, or 7 oz. On the other hand, it is estimated by Bidder and Schmidt, from the results of their experiments on various animals, that the daily amount of bile secreted by man is not less than 56 oz. (avoird.); of which about 5 per cent. is solid matter. It appears from the carefully-conducted observations of these laborious investigators, that the rate of secretion is by no means uniform, but that it bears a certain relation to the digestive process; the quantity poured forth in a given time being greatest about ten or twelve hours after a full meal, and then diminishing until it reaches its minimum, for which about as many more hours are required. Thus a cat, two hours after a full meal of flesh, secreted at the rate of 7·5 grains of bile per hour; at the fourth hour, 9·7 grains; at the sixth hour, 11·6 grains; at the eighth hour, 12·7 grains; and at the tenth hour, thirteen grains. From the tenth to the twenty-fourth hour, the secretion diminished at the rate of 4-10ths of a grain per hour; until it reached the lowest of the above amounts. The secretion diminishes considerably when food is withheld for some time; the quantity poured out after ten days' starvation being only about one-eighth of what it is when at its maximum. Still it is obvious, that although its rate is thus greatly influenced by the stage of the digestive process (which is the less to be wondered at, when it is remembered that the secretion is formed from blood that is charged with newly absorbed and imperfectly-assimilated matters), the excrementitious character of the secretion requires that its elimination shall be constantly going on to a certain degree; but a receptacle is provided in man, as in most others among the higher animals whose digestion is performed at intervals, for the storing up of the fluid until it can be usefully employed in that process. The intestinal orifice of the ductus choledochus is closed by a sort of sphincter; and the fluid secreted during the intervals of digestion, not being propelled with a force sufficient to dilate this, flows back into the gall-bladder, which dilates to receive it. The presence of food in the duodenum seems to excite the walls of the gall-bladder and of the biliary ducts (which contain a large quantity of non-striated muscular fibre), to a contraction sufficiently powerful to propel their contents into the intestine, in spite of the opposition of the sphincter; but whether this takes place through a reflex action of the nervous system, or through the direct stimulation of the muscular coat of the duct by the passage of alimentary matters over its orifice, we have at present no means of satisfactorily determining. It will be recollected that the gall-bladder is usually found distended with bile, in cases of death from starvation (§ 71), notwithstanding the diminution in the amount actually secreted. Of the bile which is poured into the intestinal tube, by far the greater proportion seems to be re-absorbed (§ 117).

Portion of one of *Brunner's Glands*, from the Human Duodenum.

"Besides the biliary and pancreatic secretions, there is poured into the upper part of the intestinal canal a fluid secreted in its own walls, which has received the designation of *Succus Entericus*. It seems not improbable that the secretion of this fluid may be the function of the glands of Brunner, which are small racemose clusters of follicles (Fig. 17), imbedded in the walls of the duodenum, extending also to the commencement of the jejunum. The intestinal juice appears, from the researches of Bidder and Schmidt, to be a colourless viscid liquid, invariably alkaline in its reaction, and containing from 3 to 3½ per cent. of solid matter. The total amount daily secreted in man is estimated by these experimenters at about 7 oz.; the rate of its secretion seems to be most rapid five or six hours after a meal; and its quantity is considerably increased shortly after the ingestion of fluid, and this without any diminution in the proportion of its solid constituents. The properties of this secretion are extremely remarkable: for, according to the results obtained by Bidder and Schmidt and their pupil Zander (which are now admitted by Lehmann), it exerts a solvent action on albuminous bodies scarcely inferior to that of the gastric juice, and a power of converting starch into sugar which is scarcely less than that of saliva or pancreatic fluid.

"The fluid of the small intestines, which is compounded by the intermixture of the biliary and pancreatic secretions with the salivary and gastric fluids, and with the secretion of the intestinal glandulæ, appears to possess the very peculiar power of dissolving, or of reducing to an absorbable condition, alimentary substances of every class; thus possessing more of the character of a 'universal solvent,' than either of these secretions has in its separate state. It completes the conversion of starchy into saccharine matter; and thus enables the former to supply the blood with an important pabulum for the combustive process, which is at once absorbed into the blood vessels. It emulsifies the oleaginous matter, and thus renders it capable of being introduced into the lacteals. And it not only restores to the state of solution those albuminous compounds which may have been precipitated by the addition of bile to the product of gastric digestion, but it also exerts a powerful solvent influence upon albuminous substances which have not been submitted to the previous agency of the gastric fluid (as has been shown by experimentally introducing pieces of meat, through a fistulous orifice, directly into the duodenum), and it thus completes the solvent process which had been very far from perfected in the stomach. What is the precise share, however, of each of these secretions, in producing this composite result, cannot be stated with any degree of certainty. It is obvious that the amount of each kind of alimentary substance that can be thus prepared for absorption in a given time, will vary with the amount of the secretion, by whose agency this preparation is specially affected; and as there are many indications that the quantity of each that is taken up in absorption is limited, and that it bears a relation to the wants of the system, it is probable that the amount of the solvent or reducing fluid secreted by each glandular apparatus, is regulated (as we have seen it to be in the case of the gastric juice, § 100) by the demand set up by the nutrient operations, rather than by the amount of alimentary matter that is waiting to be digested. The processes of digestion and conversion are probably continued during the entire transit of the alimentary matter along the small intestine, and at the same time the products of that conversion are gradually being withdrawn by absorbent action; so that, by the time it reaches the cæcum, the undigested residue contains little else than the innutritious or insoluble components of the food, together with the excrementitious portion of the bile and of other secretions. Up to this time, the contents of the canal have an alkaline reaction; but in the cæcum they again become acid; and it has been supposed that this change depends upon the secretion of a fluid, analogous to the gastric juice, by the large and numerous tubular glands contained in the parietes of this part, whereby the albuminous matters still undigested might be more completely dissolved. This supposition appeared to derive weight from the fact that the cæcum is peculiarly large in most herbivorous animals, the 'appendix vermiformis' being also of greatly increased dimensions, and sometimes double. But from the experiments and observations of Blondlot, it seems probable that the acid of the cæcum is rather a product of the transformation of saccharine substances in the alimentary canal, than a secretion from its walls.* Still, as this lactic acid has a solvent power for albuminous matters, which is equal, or nearly so, to that exerted by hydrochloric acid, it is by no means impossible that it may be subservient to the completion of the digestive process in the cases in question; since, the larger the proportion of the aliment composed of saccharine matters, the greater will be the importance of a thorough extraction of its albuminous constituents.

"The intestinal tube is furnished, throughout its entire length, with innumerable simple open glandulæ, the 'follicles of Lieberkühn;' these are straight narrow cæca, standing side by side, with very little intervening substance (except where the Peyerian bodies lie amongst them), and corresponding in length with the thickness of the mucous membrane. Their orifices are seen in the interspaces between the villi, where they are so closely set together as to seem like the apertures of a sieve; and they are arranged in rings around the Peyerian glandulæ (Fig. 20). The precise nature of their secretion is unknown; and it seems not improbable that notwithstanding the close resemblance which they bear to one another in anatomical characters, there may be some variety of function among them. Thus it is likely that some of them (like the mucous glandulæ of the stomach) are everywhere destined to supply a protective mucus; whilst some of those in the higher part of the intestinal tube may furnish the succus entericus; and some of those in the lower may be concerned in the elimination of that peculiarly fæcal matter, which seems to be rather an excretion from the blood, than the result of the decomposition of any constituents of the food (§ 118).

"The undigested residue of the food, mingled with the products of secretion that have been poured into the alimentary canal, gradually acquires, in the large intestine, the ordinary consistency of fæces, through the continuance of the absorbent process, whereby the superfluous fluid is removed. The condition of this residue has been particularly studied by Dr. Rawitz, who examined microscopically the products of the artificial digestion of different kinds of aliment, and the contents of the fæces of different animals that had eaten the same articles. 'The general results of his examinations, as regards *animal* food, show that the muscular tissue breaks up into its constituent fasciculi, and that these again are divided transversely; gradually the transverse striæ become indistinct, and then disappear; and, finally, the sarcolemma seems to be dissolved, and no trace of the tissue can be found in the chyme, except a few fragments of fibres. These changes ensue most rapidly in the flesh of fish and hares, less rapidly in that of poultry and other animals. The fragments of muscular tissue which remain after the continued action of the digestive fluid, do not appear to undergo any alteration in their passage through the rest of the intestinal canal; for similar fragments may be found in fæces, even twenty-four hours after the introduction of the meat into the stomach. The cells of cartilage and fibro-cartilage, except those of fish, pass unchanged through the stomach and intestines, and may be found in the fæces. The interstitial tissues of these structures are converted into pulpy textureless substances in the artificial digestive fluid, and are not discoverable in the fæces. Elastic fibres are unchanged in the digestive fluid.* Fatty matters also are unchanged: fat cells are sometimes found quite unaltered in the fæces; and crystals of cholesterin may usually be obtained from fæces, especially after the use of pork fat. As regards *vegetable* substances, Dr. Rawitz states that he 'frequently found large quantities of cell-membranes unchanged in the fæces; also starch-cells, deprived of only part of their contents. The green colouring principle, chlorophyll, was usually unchanged. The walls of the sap-vessels and spiral-vessels were quite unaltered by the digestive fluid, and were usually found in large quantities in the fæces; their contents, probably, were removed.' † Besides the undigested residue of the food, the microscope enables us to recognise the brown colouring matter of the bile, epithelium-cells, and mucus-corpuscles, and various saline particles, especially those of the ammoniaco-magnesian phosphate,‡ whose crystals are well defined; most of which are derived from the secretions. The quantity of fæcal discharge which is daily passed by an adult, seems to average from 4 to 6 oz.; but this contains 75 per cent. of water; so that the dry solid matter thus evacuated is not above 1 oz. or 1½ oz. Of this, from 23 to 31½ per cent. (the proportion being highest when an abundant meat diet has been consumed) consists of an inorganic ash."

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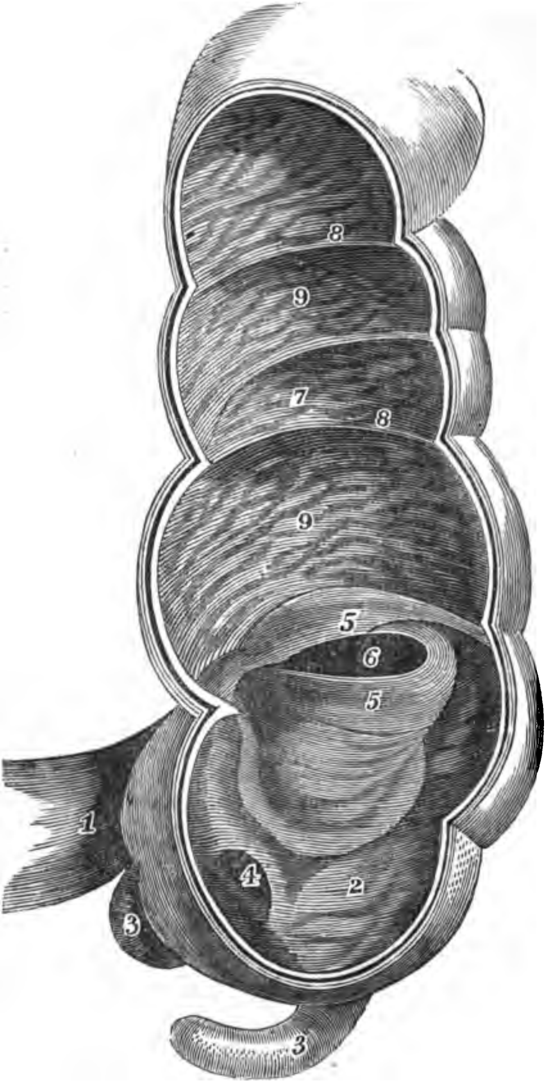
* See his "Traité Analytique de la Digestion," p. 103.

A POISON: BY DR. PROUT.—There is an article much used in various ways, though not as an aliment, the deleterious effects of which on the assimilating organs require to be briefly noticed—namely, tobacco. Although, confessedly, one of the most virulent poisons in nature, yet such is the fascinating influence of this noxious weed, that mankind resort to it in every mode they can devise, to ensure its stupefying and pernicious agency. Tobacco disorders the assimilating functions in general, but particularly, as I believe, the assimilation of the saccharine principle. I have never, indeed, been able to trace the development of oxalic acid to the use of tobacco, but that some analogous and equally poisonous principle (probably of an acid nature) is generated in certain individuals by its abuse is evident from their cachectic looks, and from the dark and often greenish-yellow tint of the blood. The severe and peculiar dyspeptic symptoms sometimes produced by inveterate snuff-taking are well known; and I have more than once seen such cases terminate fatally with malignant disease of the stomach and liver. Great smokers also, especially those who employ short pipes and cigars, are said to be liable to cancerous affection of the lips. But it happens with tobacco, as with deleterious articles of diet, the strong and healthy suffer comparatively little, while the weak and predisposed to disease fall victims to its poisonous operation. Surely, if the dictates of reason were allowed to prevail, an article so injurious to the health, and so offensive in all its modes of enjoyment, would speedily be banished.

The cæcum is the commencement of the colon, or large gut, and rises from the lower part of the right side of the bowels. Smith says it has a digestive office; others think some change in the matter which has passed the bowels takes place; but nothing certain is known. Hard substances, such as buttons or fruit stones, which have passed the bowels, lodge here sometimes, and cause mischief. Sometimes it is inflated with wind, and has led to supposition of tumour, causing unfounded alarm. The muscular bands of the colon are well developed.

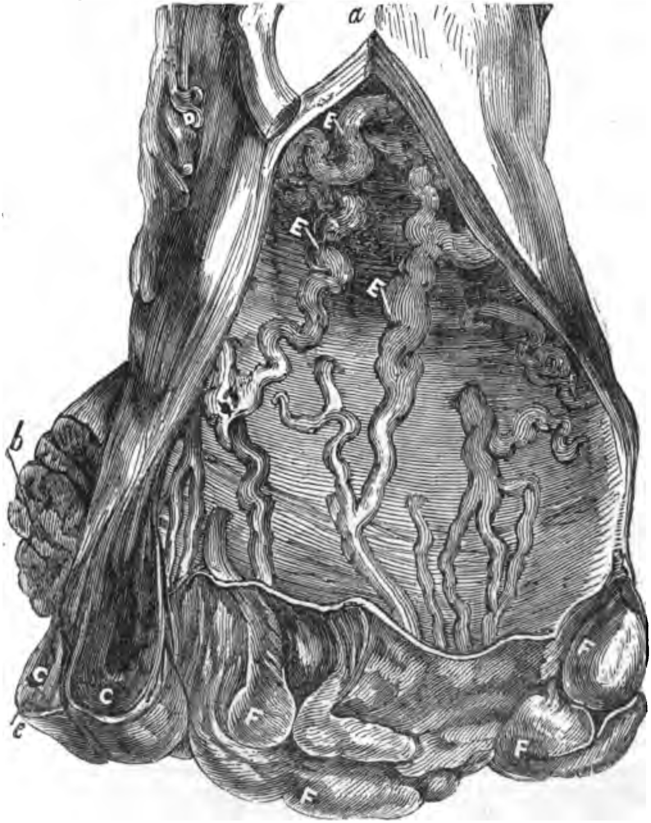


THE CÆCUM.

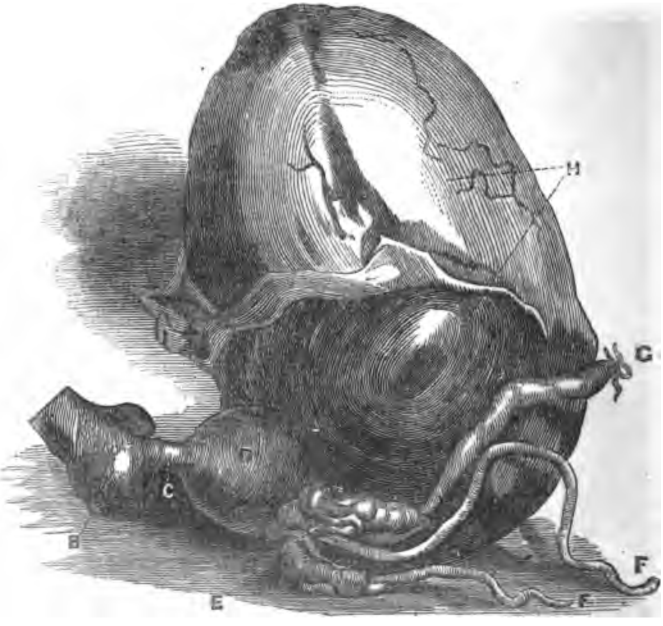
Fig. 2, a section of the cæcum and part of the colon, with the lower termination of the ileum, showing the ileocæval valve; 1, the ileum near to its termination; 2, the cul-de-sac of the cæcum; 3, 3, the appendix vermiformis; 4, the entrance of the appendix vermiformis; 5, 5, the two semilunar segments forming the ileocæcal valve; 6, the opening of the ileum into the cæcum; 7, the colon; 8, 8, valvular projections of the mucous membrane, forming the boundaries of the sacculi of the large intestine; 9, 9, the surface of the mucous membrane raised into minute folds.

DISEASES OF THE RECTUM (*the last part of the bowel*), **PILES, etc.**—The following four engravings are from "Quain's Diseases of the Rectum;" the illustrations in the work are finely coloured, and of course give a more correct idea of the blood-vessels. I have inserted these the full size, for the purpose of showing the nature and cause of piles, a complaint so very common from drinking ardent spirits and other alcoholic beverages, from sedentary habits with the abstemious, and the want of cold water application in the form of sitz baths. The blood veins are shown gorged and enlarged from want of muscular power in the vein to propel the blood, causing distension, and eventually permanent enlargement and abscess.

Engraving IV.—The bowel being partially laid open and stripped of the mucous membrane, enlarged and tortuous veins are shown, terminating in the hæmorrhoids (piles), which are seen to hang below the sphincter. *a*, the cut edges of the bowel at the upper end of the division; *b*, the sphincter; *c*, hæmorrhoids, where cut through; *d*, the veins outside the gut; *e*, the veins within, seen to be large and tortuous; *f*, piles formed by the congested blood-vessels being distended.



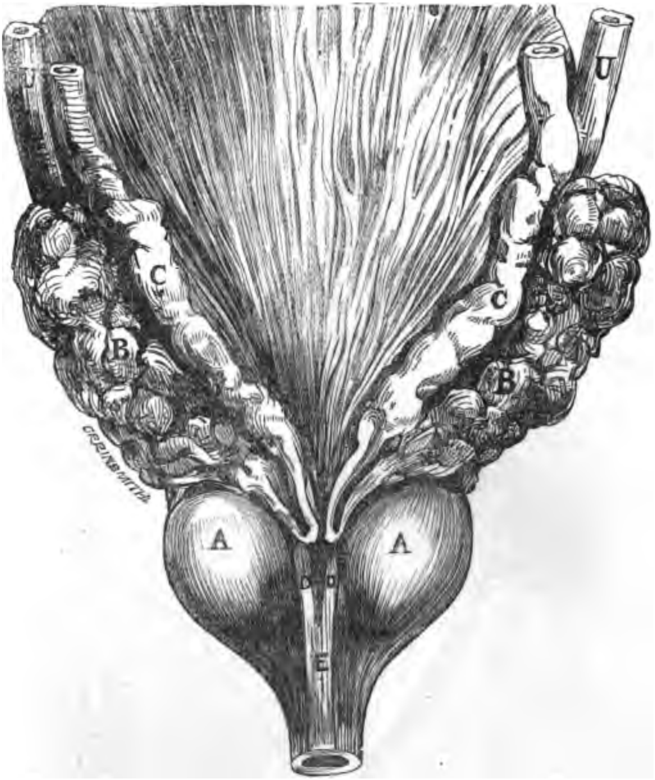
PERITONÆUM.—(From the Greek, *I extend round.*) A strong simple membrane, by which all the viscera of the abdomen are surrounded. It has an exceedingly smooth, exhaling, and moist internal surface. Outwardly it is everywhere surrounded by cellular substance, which, towards the kidneys, is very loose and very fat, but is very short at the lower tendon of the transverse muscles. It begins from the diaphragm, which it completely lines; and at the last fleshy fibres of the ribs, and the external lumbar fibres, it completes the septum, in conjunction with the pleura, with which it is continuous through the various intervals of the diaphragm. Posteriorly, it descends before the kidneys; anteriorly, behind the abdominal muscles. It dips into the pelvis from the bones of the pubes, passes over the bladder, and descends behind; and being again carried backwards at the entrance of the ureters, in two lunar folds, it rejoins upon the intestinum rectum that part of itself which invests the loins; and in this situation lies before the rectum. The cellular texture, which covers the peritonæum on the outside, is continued into sheaths in very many places, of which, one receives the testicle on each side, another the iliac vessels of the pelvis, viz., the obturatoria, those of the penis and bladder, and the aorta, and, ascending to the breast, accompanies the œsophagus and vertebræ: by means of which there is a communication between the whole body and the peritonæum, well known in dropsical people. It has various prolongations for covering the viscera.



BLADDER, URINARY AND SEMINAL VESSELS.

B, bulb of urethra; C, membranous part of urethra; D, prostate gland; E, vesicula seminales; F F, vasa deferentia; G, the ureter, by which the urine passes from the kidneys into the bladder, see page 364; H, bladder ered by the peritoneum. (Bell's Anatomy.)

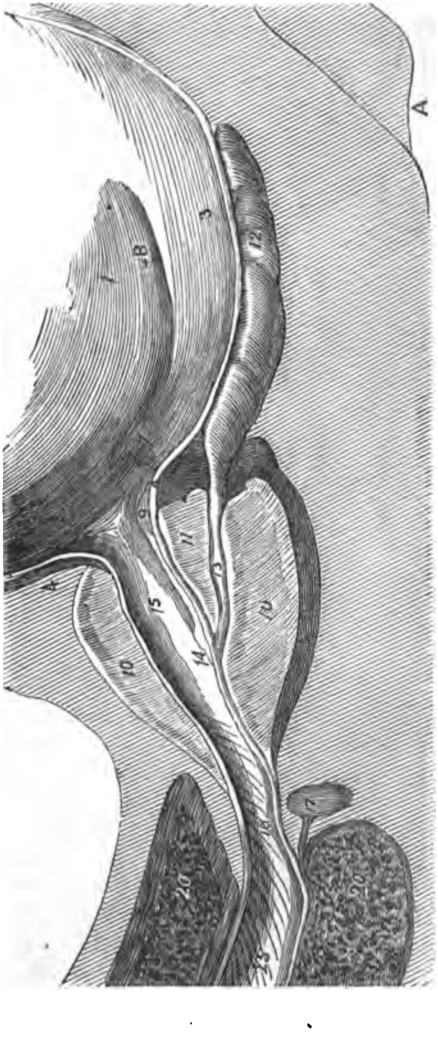
Stricture and disease of the urethra and prostate gland, often termed the old man's disease, is too important a subject to be omitted, although from the nature and causes of it, and the anatomy of the parts, it can only be briefly discussed in this work. Hodgson's work, and also Sir Charles Bell's Anatomy, and other works, give very interesting and necessary information for the prevention of these formidable, dangerous, and painful diseases. The benefit of the habitual use of the sitz bath will be obvious, when the complicated structure of the parts near the termination of the rectum is studied, and the injurious tendency of tight trowsers, long sitting on



This is a view of the base of the bladder, with the prostate gland, vesiculæ seminales, and vasa deferentia. *aa*, the lateral lobes of the prostate; *bb*, the vesiculæ seminales; *cc*, terminal portions of the vasa deferentia; *dd*, a pair of shallow grooves, which indicate the course of the ejaculatory ducts; *e*, a groove, which is sometimes seen on the under surface of the prostate, and corresponds to the urethra at that part; *u u*, the terminal portions of the ureters.—(From "Disease of the Prostate Gland," by Decimus Hodgson, M.D. Churchill, London.)

soft heating cushions, and the use of alcoholic drinks, all which tend to excite and weaken the organs, as well as produce piles. The use of tobacco is also a very common cause of paralysis of these parts. The cuts are much curtailed from the original drawings in Sir Charles Bell's, and Quain and Wilson's Anatomy, from motives of delicacy.

THE PROSTATE GLAND nearly resembles a chestnut. It usually measures a little more than an inch from side to side, an inch from before backwarks, and half an inch in thickness. Situated deeply in the pelvis, it will be found to enclose part of the neck of the bladder and the commencement of the urethra at their junction; the tube, however, being so placed as that two-thirds of the substance of the gland lie beneath it.

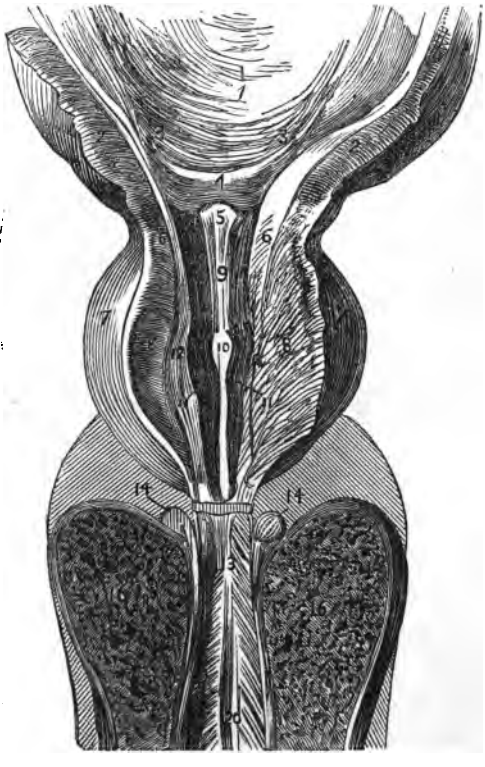


SIDE SECTIONAL CUT.

1, interior of bladder; 4, neck of bladder; 8, opening of one of the ureters into the bladder; 9, uvula vesica; 10, 10, prostate gland; 11, third lobe of prostate; 12, vesicula seminales of left side; 13, ejaculatory duct, passing beneath the third lobe, opening into the prostate portion of urethra; 14, verumontanum; 15, prostate portion of urethra; 16, membranous portion of urethra; 17, one of Cowper's glands, with its excretory duct; bulbous portion of corpus spongiosum.

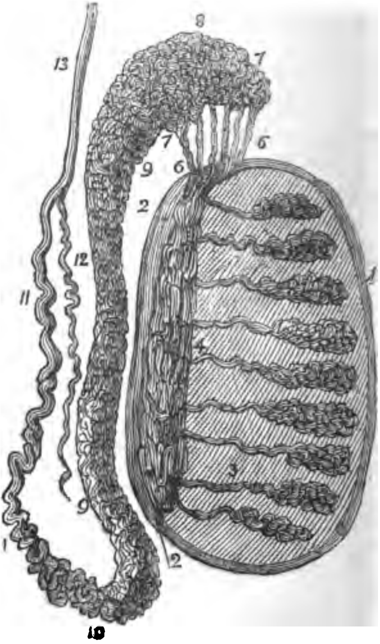
The prostate is also traversed by the common seminal ducts, which pass from behind forward through its substance, and open into the urethra; it also lays immediately beneath the anterior ligaments of the bladder, and rests on the middle portion of the rectum, to which it is united by means of dense cellular membrane.

The prostate gland consists of three lobes, two of which placed laterally are of equal size; the third (a small rounded body) is connected intimately with the others lying behind and between them. The third lobe is exposed by turning down the vesicula and seminal ducts, being placed between the latter and the bladder, and corresponds to the elevation described as the *luette vésicale.* If enlarged, the third lobe forms a projection into the neck of the bladder, which would afford impediment to the evacuation of urine, or the introduction of an instrument. The tissue of the gland is resistant, of a greyish colour, and consists of a series of follicles aggregated together. These secrete a whitish ropy mucus, which is poured from ten or twelve orifices into the urethra, each side of the verumontanum. It is probable that this mucus serves to sheathe the passages, and preserve them from the acrid urine. It certainly unites also to the seminal fluid, and is discharged with it by the urethra.



1, bladder; 2, 2, divided coats of bladder turned aside; 3, 3, openings of termination of ureters into the bladder; 4, triangular smooth surface inside base of bladder; 5, projection of mucous membrane at the commencement of the urethra; 6, 6, neck of the bladder; 7, 7, prostate gland; 8, 8, divided surface of prostate; 9, 9, prostatic portion of urethra; 10, verumontanum; 11, 11, opening of the seminal ejaculatory ducts; 12, 12, prostatic sinuses in which are seen the numerous openings of the prostatic ducts; 13, 13, membranous portion of urethra; 14, 14, Cowper's glands; 16, 16, bulb of urethra divided by a longitudinal incision; 20, bulbous portion of urethra. (From "Quain and Wilson's Anatomy.")

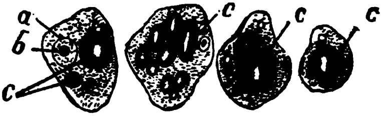
The testes are suspended at unequal heights, that of the right side being higher than the opposite: this disposition prevents the inconvenience or injury that might result from one being pressed against the other in certain positions of the thighs. They are two soft, pulpy, dark-yellow bodies, divided into lobes, and found to consist of vast numbers of minute tubes; in these tubes the seminal fluid is formed. According to Monro, their number is about 300, and the length of each 16 feet, making a total of 4,800 feet, and 1-200th of an inch diameter. The fluid is then transmitted from the vasa efferentia by the vasa deferentia through the spermatic cord over the lower part of the bladder to the vesicula seminales, which are two narrow membranous sacs, placed along the base of the bladder, and extend obliquely from the uterus to the base of the prostate gland; piercing which, they open into the urethra. The passages, however, from the vasa deferentia and the vesicula seminales continue separate and distinct into the urethra.



SECRETING AND EXCRETING STRUCTURE OF TESTES.

3, 3, lobules of testes composed of the convolutions of the tubuli seminiferi, by which the seminal fluid is elaborated out of the blood; 4, 4, vasa recta; 5,5, reste testis; 6,6, vasa efferentia; 7,7, cases of tubuli formed by vasa efferentia; 8, mass of tubuli; 9, 9, body of the epididymis; 10, globular minor; 11,11, convulated commencement of vas deferens; 12, vasculum aberrans terminating in the commencement of the vas deferens; 13, vas deferens, which carries the seminal fluid by the spermatic cord round the base of the bladder into the vasa deferentia (as shown in cut, page 342 F), and by the vesicula seminales (E) into the prostate gland. (From "Quain and Wilson's Anatomy.")

The mass of the liver is, as we have seen, made up of a plexus of capillary blood-vessels, the meshes of which are filled with nucleated cells containing the peculiar principles of the biliary secretion,



Nucleated cells, from a liver in a state of fatty degeneration: *a*, nucleus; *b*, nucleolus; *c c c c*, fatty globules.—*Bowman*.

The liver in spirit-drinkers is often rendered hard, and tough, and granular, by the contraction and induration of coagulable lymph, deposited, in consequence of inflammation, in the areolar tissue in the portal canals.

When the stomach and duodenum are empty, part only of the bile flows along the common duct into the duodenum; the remainder passes down the cystic duct into the gall-bladder.

During digestion, on the contrary, the gall-bladder contracts, and part of the bile accumulated in it, together with all which is brought by the hepatic duct, is poured into the duodenum.

Very extensive structural changes in the liver—in the fatty liver, the gin-drinker's liver, the scrofulous liver—may exist without jaundice; and that in those cases in which jaundice results from permanent closure of the common duct, the jaundice sometimes lessens after the lapse of many months, and when the secreting cells of the liver are almost entirely destroyed.

The sugar passing out of the liver by the veins and lymphatics at once enters the general current of blood, and is rapidly transformed. In a healthy animal, the quantity that enters the blood in the intervals of digestion is all transformed in the lung, so that not a trace of it can be found in the arterial blood. During digestion, when its quantity increases, some of the sugar may escape transformation in the lung, and be sent in the arterial blood to every part of the body: but it is not then found in the urine or other secretions, and must therefore be transformed in the blood. It is only when the secretion is so increased as to constitute disease that the sugar passes off in the urine, and the *diabetic* state is produced. What precise transformation the sugar undergoes in the blood is still uncertain. From some experiments made to determine this point, Bernard concludes that its transformation is not effected by the immediate influence of oxygen—that the sugar is not *burnt* in the lung, and exhaled as carbonic acid—and that it must undergo transformation by the lactic or some other fermentative process.

The most remarkable results which Bernard has arrived at are those which relate to the influence of the nervous system in controlling and modifying the secretion of sugar.

The principal of these results are the following:—

1st. That division of the pneumogastric nerves in the neck arrests the formation of sugar. If this operation be performed on a dog, and the animal be killed three days after, not a trace of sugar can be found in the blood of the hepatic vein or in the substance of the liver itself.

2nd. A second result which, on its first announcement, was very startling, is, that in all animals in which he could perform the experiment (dogs, rabbits, guinea-pigs), lacerating the floor of the fourth ventricle of the brain between the auditory nerves and the par vagum increases the formation of sugar to such a degree that a large quantity of sugar passes off in the urine, and the creature is rendered diabetic. The diabetic state continues some days, until the injury is repaired, after which sugar can no longer be found in the urine. Bernard states that the experiment which led to this singular result was suggested by his having noticed, in making experiments with another purpose, that pricking the pons varioli at the origin of the fifth nerve caused an abundant secretion of tears and saliva. He further found that irritation of the floor of the fourth ventricle of the brain increases the secretion of sugar in the liver when the par vagum has been divided in the neck; showing that the nervous influence exciting the secretion is transmitted to the liver, not down the pneumogastric nerves, but down the spinal marrow. This last conclusion was confirmed by another result, that division of the spinal marrow below the brachial enlargement puts a stop in all cases to the production of sugar.

Bernard hence infers that the nervous influence that ordinarily excites the secretion of sugar is a *reflex* influence—that it passes up the pneumogastric nerves to the nervous centre (medulla oblongata or brain), and thence down the spinal marrow, and along the spinal nerves and the branches of the great sympathetic communicating with them to the liver.

Dr. Budd shows the connexion betwixt the liver and the lungs. When we breathe pure air, and in sufficient quantity, the lungs perform their natural office in taking in oxygen, which consumes the carbon or waste matter perfectly; if we take little outdoor exercise, or breathe impure air (and which is also deficient in oxygen), the carbon is not consumed, and the useless and offensive matter remains in the system, doing mischief, except so far as the liver can take up the office of the lungs. The body is so constructed that other organs will temporarily assist any weak organ, or counteract the over-work or deficient nutriment of another; but if this strain is continued, the assisting organs are overtaxed, and the inactive organ becomes weaker from want of use. So sedentary and indolent persons throw on the liver part of the work of the lungs, and become chronic dyspeptics.

Andral, and many other writers, have remarked that congestion of the liver from impeded circulation through the lungs, when long continued, often leads to organic disease: and they have thus accounted for the frequent association of organic disease of the liver with organic disease of the heart.

There is a direct and fundamental relation between the function of the liver and that of the lung. Fortunately, the activity and effects of the respiratory process are largely under our control. In the vast power we have of modifying these by appropriate regulations, having reference to the great conditions of air, exercise, temperature, and food, we have means much more effectual than any other in dealing with biliary disorders.

Of these disorders, on the other hand, the neglect of such regulations is by far the most fruitful source.

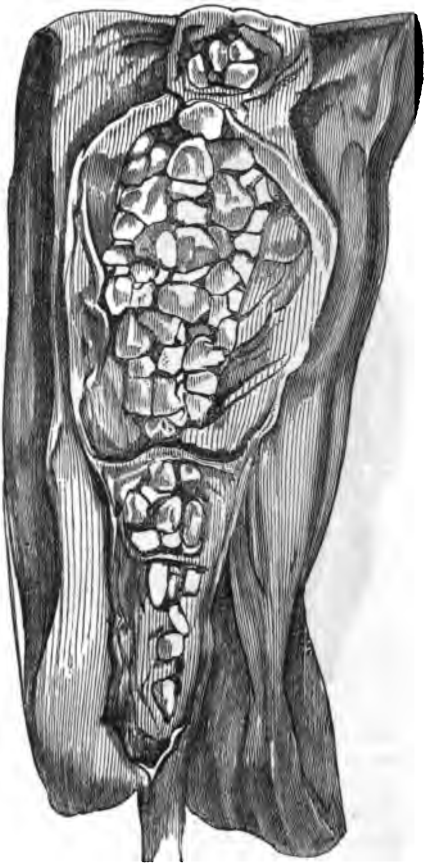
Thus, for example, may be explained many of the bilious disorders of hot climates. If, in such climates, the food be not regulated in accordance with the smaller needs of the economy as to animal heat, an excess of bile is formed, and disorder of the stomach and intestines—bilious vomiting and diarrhœa—is the consequence.

Hence, also, the general repugnance to rich meats, and the greater tendency which these and spirituous liquors unquestionably have to produce disease of the liver, in hot seasons and in tropical climates.

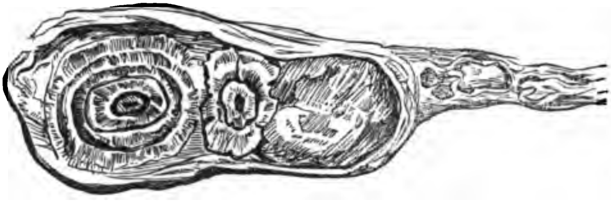
In the same way may be explained the greater frequency of bilious disorders in middle life, when men begin to take less exercise, and their respiration becomes less active, while, on the other hand, the tendency to indulgence at table but too often increases.

We may also often see inverse evidence of these relations in the effect of pure air and active exercise, in relieving various disorders that result from repletion, and from the retention of principles which, if not burnt in respiration, should pass off by the liver as bile. Every sportsman must have remarked the effect of a single day's hunting in clearing the complexion. It has, no doubt, much the same effect on the liver as on the skin.—*Budd.*

"The liver in health measures about 12 inches from side to side, and 6 or 7

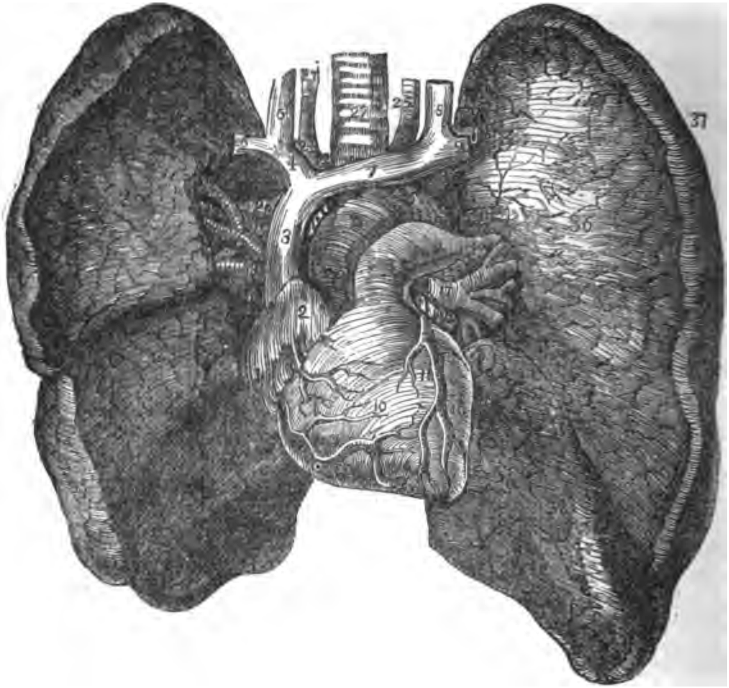


Gall-bladder filled with gall-stones, which have all a crust of pure cholesterine. From a man, 64 years of age, who died in King's College Hospital, of softening of the brain. No disease of the liver was suspected.—*Budd.*



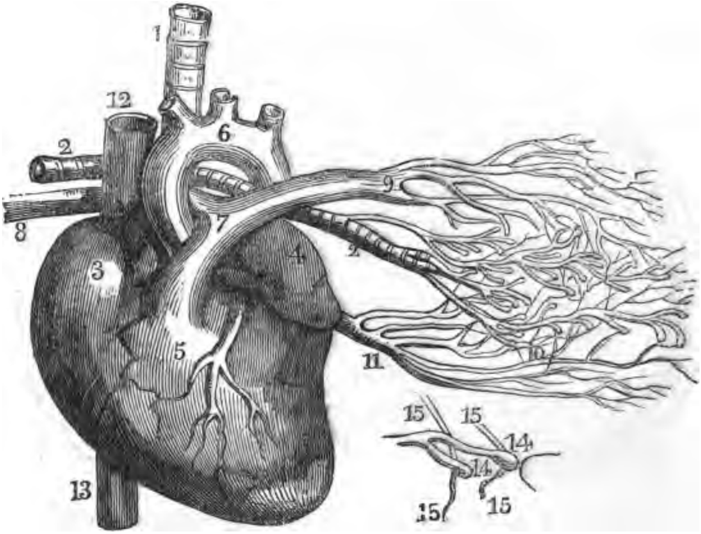
Gall-bladder and cystic duct containing gall-stones. The calculi have all a crust of pure cholesterine.

from its antero-posterior diameter; its bulk corresponds to nearly 100 cubic inches, and its weight varies from 3 to 4 pounds, according to the quantity of blood which it may contain at the time it is examined."—*Dr. Beale.*

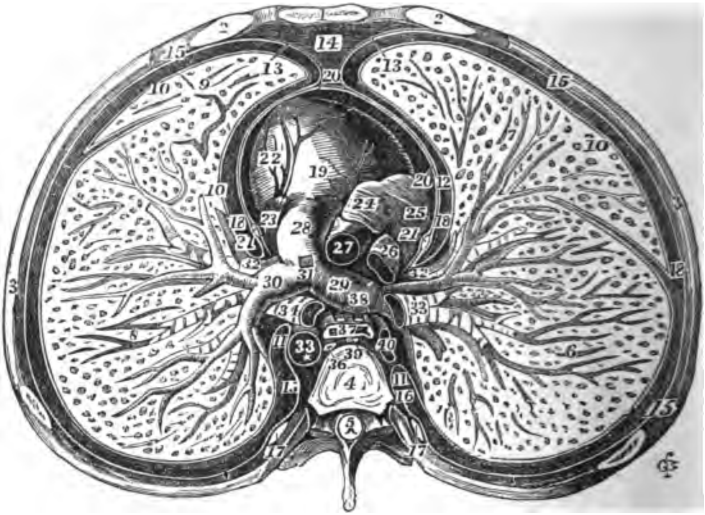


ANTERIOR VIEW OF THE LUNGS AND HEART, WITH THEIR GREAT VESSELS.—*Quain.*

1, right auricle of the heart; 2, appendix auricle; 3, superior vena cava; 4, right vena innominata; 5, right jugular vein; 6, right subclavian vein; 7, the left vena innominata; 8, the left internal jugular vein; 9, the subclavian vein; 10, the right ventricle; 11, branches of the great coronary artery; 12, ditto of the right; 13, pulmonary artery; 14, left ditto; 15, the right pulmonary artery entering the right lung; 16, appendix of left auricle; 17, one of the left pulmonary veins; 18, one of the right pulmonary veins; 19, left ventricle; 20, ascending aorta; 26, left subclavian artery; 36, 38, interior surface of the lungs.



1. The trachea; 2. The right and left bronchus; the left bronchus showing its division into smaller and smaller branches in the lung, and the ultimate termination of the branches in the air vesicles. 3. Right auricle of the heart. 4. Left auricle. 5. Right ventricle. 6. The aorta arising from the left ventricle, the left ventricle being in this diagram concealed by the right. 7. Pulmonary artery arising from the right ventricle and dividing into, 8, The right, and, 9, The left branch. The latter is seen dividing into smaller and smaller branches, and ultimately terminating on the air vesicles. 10. Branches of one of the pulmonary veins proceeding from the terminations of the pulmonary artery on the air vesicles, where together they form the network of vessels termed the Rete Mirabile. 11. Trunk of the vein on its way to the left auricle of the heart. 12. Superior vena cava. 13. Inferior vena cava. 14. Air vesicles magnified. 15. Blood-vessels distributed upon them.—*Dr. Smith.*



A cross section of the Chest, showing the relative position of its viscera and large vessels, with the reflection of the pleura.—*Quain.*

3, 3, the upper borders of two ribs forming the boundaries of the section; 4, the upper surface of a dorsal vertebra (spine); 5, section of spinal marrow; 6, section of the right lung, its superior lobe; 7, section of middle lobe; 8, section of lobe of left lung; 9, its inferior lobe, the structure of the lung is seen upon the surface of these sections; 10, 10, the pleura pulmonalis of the two lungs; 12, 12, the pleura lining the external surface of the pericardium or heart-bag at each side; 17, the sympathetic nerve on each side; 18, 18, the cavity of the pleura at each side; 19, the heart; 20, 20, pericardium enclosing the heart; 22, left ventricle; 19, right ditto; 27, ascending aorta; 28, right pulmonary artery; 30, left ditto; 36, thoracic duct; 37, œsophagus or gullet; 39, right pneumogastric nerve.

PLEURA.—From the Greek word for a rib, or the side of the thorax formed by the ribs, but now applied by anatomists to the membrane which lines the internal surface of the thorax, and covers its viscera. It forms a great process, the mediastinum, which divides the thorax into two cavities. Its use is to render the surface of the thorax moist by the vapour it exhales. The cavity of the thorax is everywhere lined by this smooth and glistening membrane, which in reality consists of two distinct portions or bags, which, by being applied to each other laterally, form the septum called mediastinum: this divides the cavity into two parts, and is attached posteriorly to the vertebræ of the back, and anteriorly to the sternum. But the two laminæ of which this septum is formed do not everywhere adhere to each other: for at the lower part of the thorax they are separated, to afford a lodgment to the heart; and at the upper part of the cavity they receive between them the thymus gland. The pleura is plentifully supplied with arteries and veins from the internal mammary and the intercostals. Its nerves, which are very inconsiderable, are derived chiefly from the dorsal and intercostal nerves. The surface of the pleura, like that of peritonæum and other membranes lining cavities, is constantly bedewed with a serous moisture, which prevents adhesions of the viscera, The mediastinum, by dividing the chest into cavities, obviates many inconveniences to which we should otherwise be liable. It prevents the right and left lungs from compressing each other when we lie on one side, and consequently contributes to the freedom of respiration, which is disturbed by the least pressure on the lungs. If the point of a sword penetrates between the ribs into the cavity of the thorax, the lung on that side ceases to perform its office, because the air being admitted through the wound, prevents the dilatation of that lung; while the other lung, which is separated from it by the mediastinum, remains unhurt, and continues to perform its functions as usual—*Hooper.*

The following is quoted from Lardner:—

" DORSAL SURFACE OF TONGUE.—It is on the superior surface, or *dorsum,* as

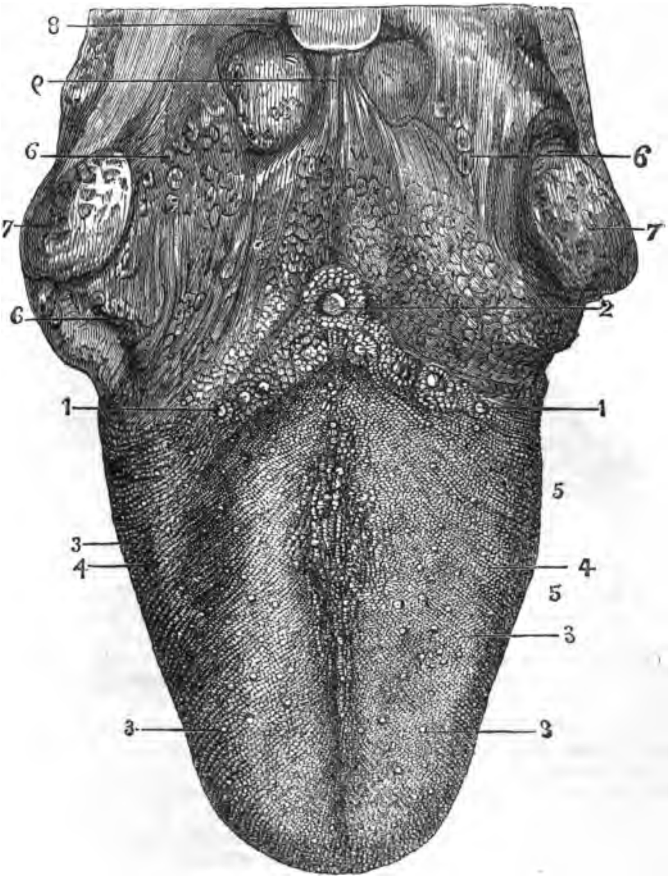


Fig. 415.

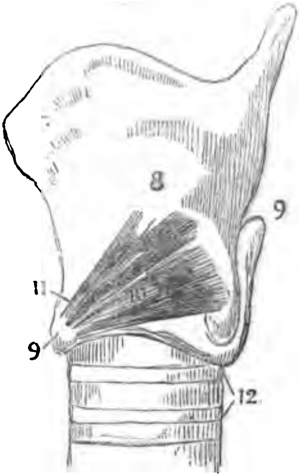
DORSAL SURFACE OF THE TONGUE, SHOWING ITS PAPILIARY STRUCTURE.—*Sappey.*

the anatomists call it, that the papillæ prevail in the greatest numbers. A view of the dorsum is given in fig. 415, from the work of Professor Sappey, which is by far the most accurate and elaborate representation of the organ which I have seen.

"That anatomist classes the lingual papillæ in four orders called Calyciform, Fungiform, Corolliform, and Hemispherical."

FUNGIFORM PAPILLÆ.—In front of the papillæ here described, and occupying the middle third of the length of the tongue, are found numerous others, much less voluminous, but more numerous and more closely packed together, like the pile of velvet. These stand perpendicular to the lingual surface, and are not inclined backwards, as was maintained by Malpighi. They are generally arranged in parallel lines emerging from the axis of the tongue, as branches emerge from the stem of a leaf. These papillæ have generally a form resembling that of a mushroom, being expanded at the summit and contracted at the base, whence they have derived the name of *fungiform*. Their magnitude is greater than that of other papillæ by which they are surrounded, but very inferior to that of the calyciform above described. These fungiform papillæ are shown in Fig. 415^3.

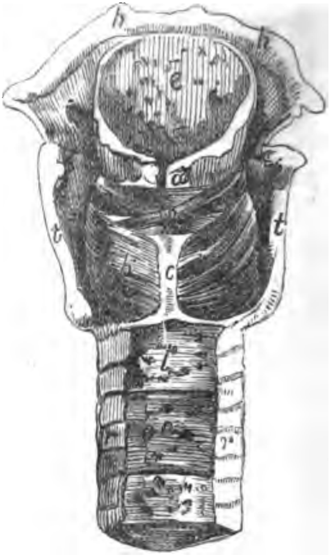
Fig. 453.



SIDE VIEW OF THE LARYNX AND PART OF THE WINDPIPE. (*Lardner.*)

8. Thyroid. 9, 9, Cricoid. 10 Crico-thyroid muscle. 11. Crico-thyroid membrane. 12. Upper rings of trachea.

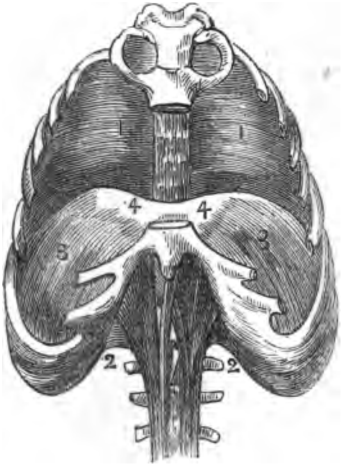
Fig. 454



TOP OF THROAT AND TRACHEA DISSECTED. (*Lardner.*)

a. Right arytenoid cartilage. *t*, *t*. Posterior margins of thyroid. *c*. Back of cricoid. *h*. Hyoid bone. *e* Epiglottis. *b*. Left posterior-crico-arytenoid muscle. *s*. Arytenoid muscle. *l*. Fibrous membrane at back of trachea, with glands lying on it. *n*. Muscular fibres of trachea. *r*. Cartilaginous rings of trachea.

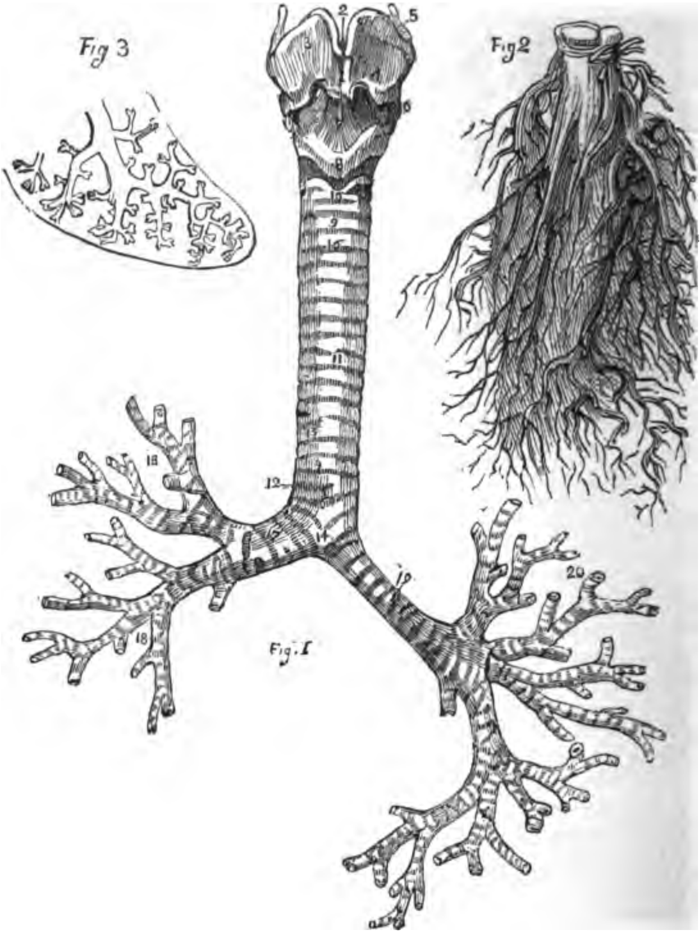
VIEW OF THE DIAPHRAGM.



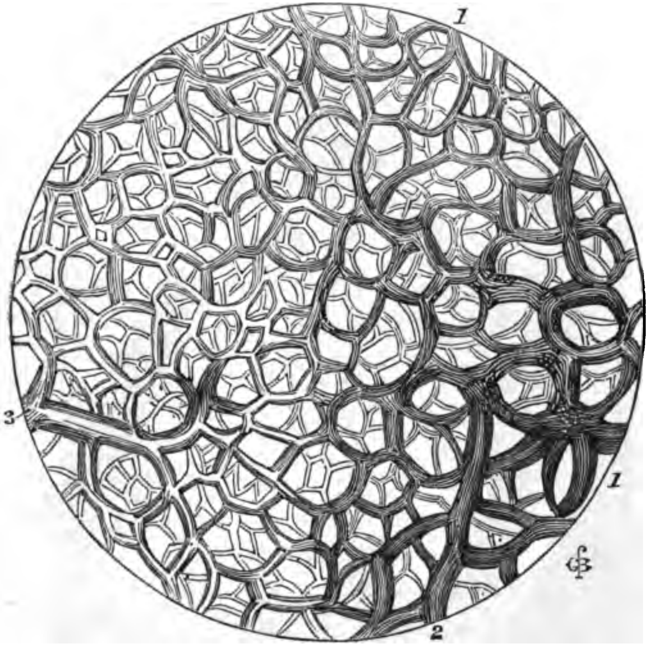
(*From Dr. Smith.*)

1. Cavities of the thorax. 2. Portion of cavity of the abdomen 3. Lateral or muscular and moveable portions of the diaphragm. 4. Central or tendinous and fixed portion of the diaphragm.

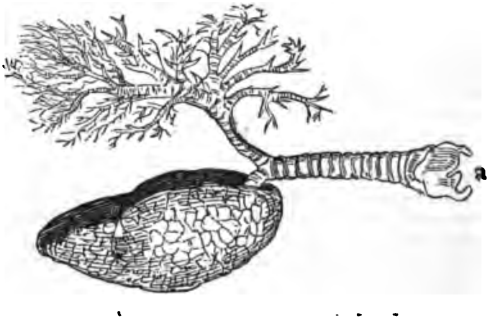
Respiratory Organs.—The following engraving of the windpipe shows also the large bronchial tubes branching out into the substance of the lungs. The fine bronchial tubes, Fig. 2, are prolongations of the larger branches. All the bronchial tubes are lined with a ciliated mucous membrane lining, and with air cells exceedingly minute opening into them, as Fig. 3; all these large and finer tubes and the minute air cells have blood veins called arteries lining their sides, besides nerves and venous vessels to carry away the exhausted blood; every time we draw in the air into the lungs it is forced by an average power of four cwt. into all these tubes and air cells to bring it in contact with the blood veins, which are of such delicate structure that the air is immediately absorbed into the blood through the sides of the veins, and turns the blood to a scarlet colour by the oxygen contained in the air. The lungs occupy the chest, and are in form of lobes, there being three in the right side and two in the left; between the latter is placed the heart, occupying as it were the place of one lobe, the whole are contained in a bag called the pleura, which is moistened by serum, that the lungs may play easy. When the blood is impoverished or inflamed, this serum is wanting, and adhesion often takes place.—*Engravings from Quain and Wilson.*



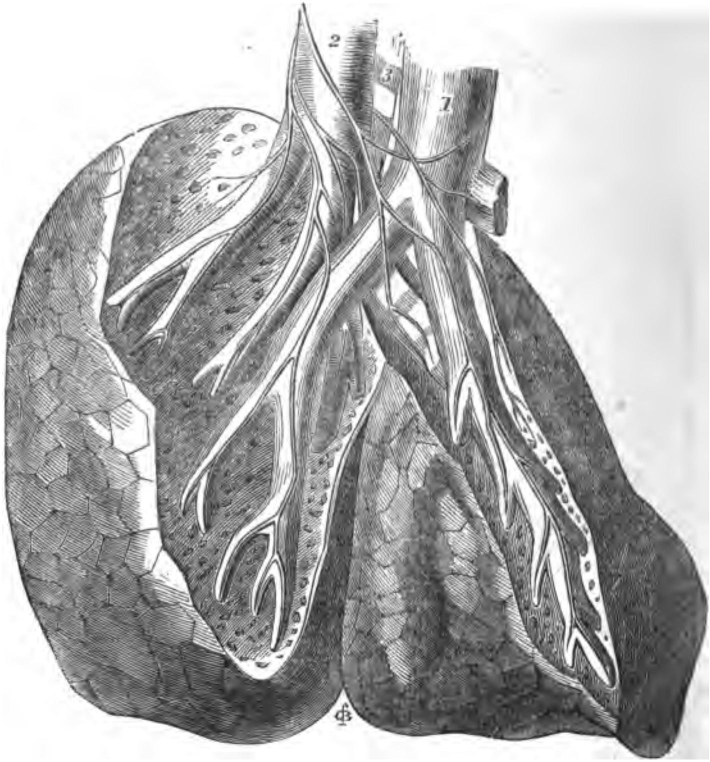
No. 1, windpipe with large bronchial tubes. No. 2, small bronchial tubes ramifying into the lungs. No. 3, air cells lining the bronchial tubes. See description of above cut, preceding page, 351.



A minute portion of the human lung magnified 50 diameters, showing the capillary network formed by the ultimate ramifications of the pulmonary artery and veins. 1, 1, the arterial (*pure blood*) side of the figure; 2, a large branch of the pulmonary artery supplying the plexus with blood. 3, a venous (*exhausted blood*) trunk conveying the blood from the capillary plexus.—*Quain.*

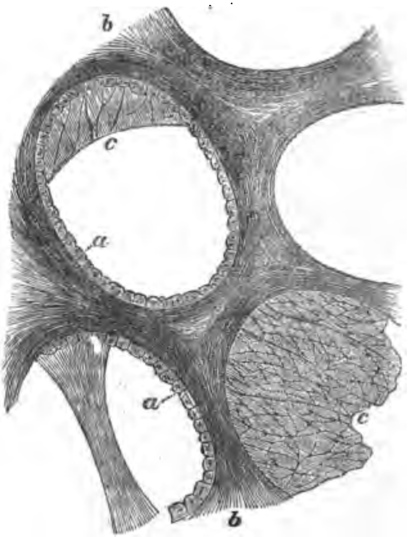


The windpipe, one lung, and the bronchial tubes shown on the left, the substance of the lungs cut away; *a* is the top of the windpipe. It is estimated that the surface of the bronchial tubes and air-cells in the lungs cover a space of thirty thousand square inches, underneath which the blood circulates, and to this space the air comes to oxygenize the blood.



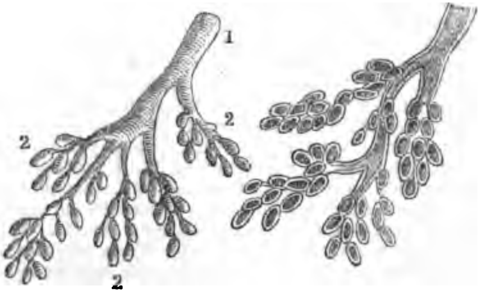
A portion of the lung, showing the distribution of the nervous filaments of the pulmonary plexuses around the vessels and bronchial tubes. 1, the pulmonary vein bringing blood to be oxygenized; 2, the pulmonary artery returning blood now fit for circulation; 3, the bronchial tube, the nervous filaments are seen ramifying upon these vessels to give motion, sensation, and power of chemical change in the blood.—*Engraving from Quain.*

"The lungs are covered with a fine membrane, a reflection of the pleura, called *pleura pulmonalis*. The internal surface of the air-cells is covered with a very fine, delicate, and sensible membrane, which is continued from the larynx through the trachea and bronchia. The arteries of the lungs are the bronchial, a branch of the aorta, which carries blood to the lungs for their nourishment; and the pulmonary, which circulates the blood through the air-cells to undergo a certain change. The pulmonary veins return the blood that has undergone this change, by four trunks, into the left auricle of the heart. The bronchial veins terminate in the vena azygos. The nerves of the lungs are from the eighth pair and great intercostal. The absorbents are of two orders, the superficial and the deep-seated; the former are more readily detected than the latter. The glands of these viscera are called bronchial. They are muciparous, and situated about the bronchia."—*Dr. Hooper.*



Air-cells of the lungs magnified 50 diameters. *a*, **epithelial lining of the cells;** *b*, **fibres of elastic tissue;** *c*, **delicate membrane, of which the cellule is constructed, with elastic fibres attached to it.**

VIEW OF THE BRONCHIAL TUBES, TERMINATING IN AIR VESICLES.



External view.—1. Bronchial tube. 2. Air vesicles.

From *Hooper.*—PNEUMONITIS. (From the Greek—the lung, and *itis*, the terminal, denoting inflammation). Inflammation of the lung. See Bronchitis, p. 286. This disease has also been called *Pneumonia, Peripneumonia*, and *Peripneumonia vera*. It is characterised by fever, difficulty of breathing, cough, and a sense of weight and pain in the thorax. It is mostly produced by the application of cold to the body, which gives a check to the perspiration, and determines a great flow of blood to the lungs. It attacks principally those of a robust constitution and plethoric habit, and occurs most frequently in the winter season and spring of the year; but it may arise in either of the other seasons, when there are sudden vicissitudes from heat to cold.

Other causes, such as violent exertions in singing, speaking, or playing on wind-instruments, by producing an increased action of the lungs, have been known to occasion peripneumony. Those who have laboured under a former attack of this complaint are much predisposed to returns of it.

The true peripneumony comes on with an obtuse pain in the chest or side, great difficulty of breathing (particularly in a recumbent position, or when lying on the side affected), together with a cough, dryness of the skin, heat, anxiety, and thirst. At the commencement of the disease, the pulse is usually full, strong, hard, and frequent; but, in a more advanced stage, it is commonly weak, soft, and often irregular. In the beginning, the cough is frequently dry and without expectoration; but, in some cases, it is moist, even from the first, and the matter spit up is various both in colour and consistence, and is often streaked with blood. If relief is not afforded in time, and the inflammation proceeds with such violence as to endanger suffocation, the vessels of the neck will become turgid and swelled; the face will alter to a purple colour; an effusion of blood will take place into the cellular substance of the lungs, so as to impede the circulation through that organ, and the patient will soon be deprived of life. If these violent symptoms do not arise, and the proper means for carrying off the inflammation have either been neglected, or have proved ineffectual, although adopted at an early period of the disease, a suppuration may ensue, which event is to be known by frequent slight shiverings, and an abatement of the pain and sense of fulness in the part, and by the patient being able to lie on the side which was affected without experiencing great uneasiness.

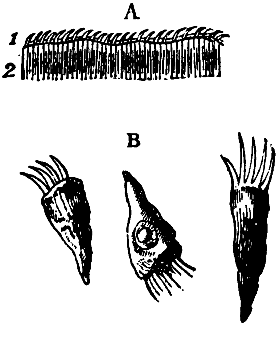
When peripneumony is not resolved, an effusion of blood takes place into the pulmonary substance, which becomes dark-coloured, ceases to crepitate, and emits a bloody serum when cut into, which is the *engouement du poumon* of the French pathologists: or coagulable lymph is thrown out, and the lung becomes solid and of the appearance of liver; whence this state is called *hepatisation*: or, lastly, inflammation of the lung may terminate in abscess more or less extensive. From the first of these three states, that of *engouement*, the affected part may recover so as to resume its former functions; but a hepatised portion of lung never recovers its natural texture. Large portions of the lung, however, may be hepatised, and yet the remaining healthy portions may be sufficient to carry on respiration; and the patient may live, though the breathing can never be free. An abscess of the lungs may break into the bronchial tubes; the matter may be expectorated, and the patient may recover. Where pneumonia is very intense, the whole substance of the lungs becomes infiltrated with purulent matter, a state which is necessarily and speedily fatal. Gangrene of the lungs is not common, but sometimes occurs, and chiefly in exhausted constitutions. It is indicated by the peculiar fœtor of the expectoration. Portions of the lungs have sloughed away, and yet the patient has recovered; but this is very uncommon. Generally speaking, when acute inflammation of the lungs produces the state of engouement, hepatisation, or abscess, to any extent, the case is fatal.

Mucous Membranes.—The *mucous membranes* line all those passages by which internal parts communicate with the exterior, and by which either matters are eliminated from the body or foreign substances taken into it. They are soft and velvety, and extremely vascular. Their basis, or proper texture, seems to belong to the albuminous structures. The internal, or free surface, of the mucous membranes is at every part invested with one or more layers of epithelial cells, which are separated from the vascular tissue by the layer of basement membrane.

The mucous membranes are described as lining certain principal tracts. 1. The *digestive tract* commences in the cavity of the mouth, from which prolongations pass into the ducts of the salivary glands. From the mouth it passes through the fauces, pharynx, and œsophagus, to the stomach, and is thence continued along the whole tract of the intestinal canal to the termination of the rectum, being in its course arranged in the various folds and depressions, and prolonged into the ducts of the pancreas and liver, and into the gall-bladder. 2. The *respiratory tract* includes the mucous membrane lining the cavity of the nose, and the various sinuses communicating with it, the lachrymal canal and sac, the conjunctiva of the eye and eyelids, and the prolongation which passes along the Eustachian tubes and lines the tympanum and the inner surface of the membrana tympani. Crossing the pharynx, and lining that part of it which is above the soft palate, the respiratory tract leads into the glottis, whence it is continued through the larynx and trachea, to the bronchi and their divisions, which it lines as far as the branches of from one-fiftieth to one-thirtieth of an inch in diameter. 3. The *genito-urinary* tract, which lines the whole of the urinary passages, from the external orifice to the termination of the tubuli uriniferi of the kidneys, extends into and through the organs of generation in both sexes, into the ducts of the glands connected with them, and in the female becomes continuous with the serous membrane of the abdomen at the fimbriæ of the Fallopian tubes.—*Kirke.*

Ciliated Epithelium, p. 84.—(*From Kirke and White.*)—This consists in the incessant vibration of fine, pellucid, blunt processes, about one-thousandth of an inch long, termed cilia, situated on the free extremities of the cells of epithelium covering certain surfaces of the body. The form of epithelium on which cilia occur is most commonly of the cylindrical kind; but sometimes, as on the surface lining the cerebral ventricles, it is of the tesselated variety.

In man, and probably in Mammalia generally, the ciliary epithelium lines the interior of the nasal cavity, except the olfactory region, and of the frontal and other sinuses communicating with it, the lachrymal canal and sac, and is spread over the mucous surface of both eyelids, but not over the the conjunctiva covering the eye itself. From the posterior part of the nasal cavity, it passes to the upper part of the pharynx, which it lines to about opposite the lower border of the atlas; it is also spread over the upper surface of the soft palate, and laterally is continued to the orifice of the Eustachian tube, through which canal it extends into the cavity and membrane of the tympanum. Ciliary epithelium occurs also over the whole extent of the respiratory mucous tract, commencing at the larynx, and ceasing only near the terminations of the bronchi. It is met with also in



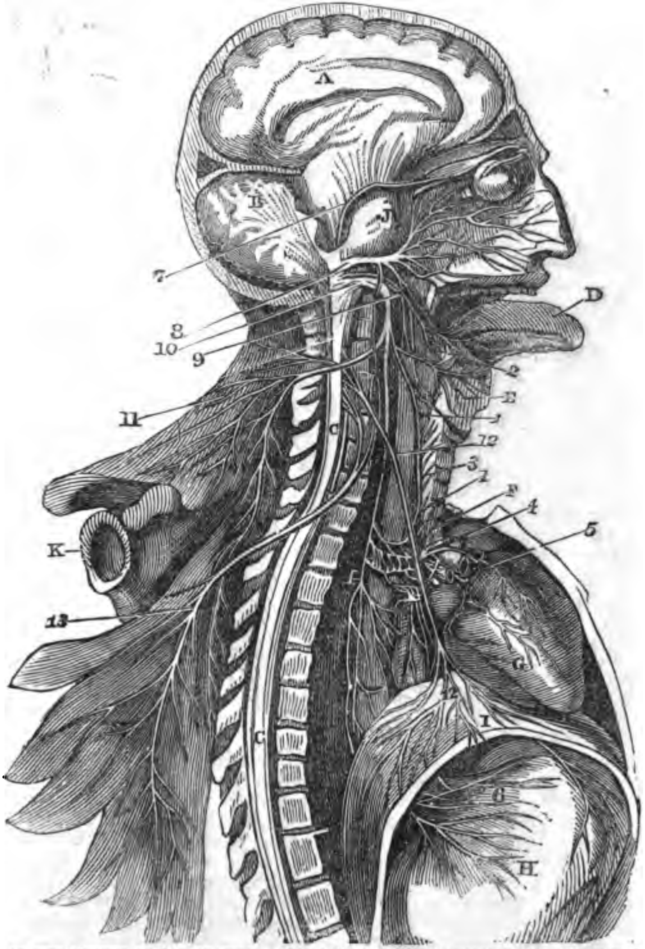
A. Cilia as seen vibrating on a portion of the mucous membrane of the trachea of a rabbit. 1, the cilia; 2, lines indicating the several epithelial cells on which the cilia are placed. After Valentin. **B.** Separate cylinders of epithelium, with cilia attached, from the trachea of the cat. After Henle.

the female generative apparatus, commencing about the neck of the uterus, extending along the Fallopian tubes to their fimbriated extremities, and continued for a short distance along the peritoneal surface of the tubes; and in the male it occurs in the epididymis.

If a portion of ciliary mucous membrane from a living or recently dead animal be moistened, and examined with a microscope, the cilia are observed to be in constant motion, either whirling round their fixed extremities so that their ends describe circles, or waving continually backwards and forwards, and alternately rising and falling with a lashing or fanning movement. During the lashing movements each of the cilia performs a motion somewhat similar to that performed during the feathering of an oar in rowing: hence the general result of their movements is to produce a continuous current in a determinate direction; and this direction is invariably the same on the same surface, being usually towards its external orifice. In the production of such current probably consists the principal use of the cilia, which are thus enabled to propel the fluids or minute particles which come within the range of their influence, and to aid in their expulsion from the body.

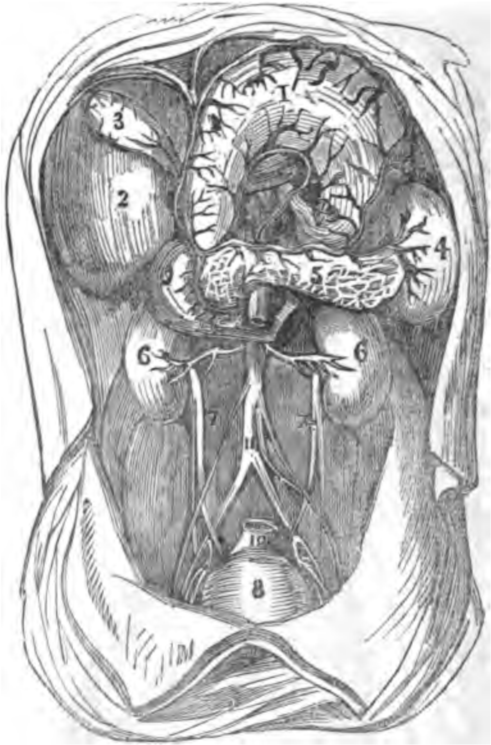
In the frog, triton, and probably most or all other naked Amphibia, the epithelium at and just within the neck or commencing dilatation of the Malpighian capsule (*in the kidneys*) is ciliated. This fact is, perhaps, connected with the peculiar arrangement of the seminal tubes or branches of the vasa deferentia, which open into one end of the Malpighian capsules, while the urine-tubes open into the others. The cilia work towards the seminal tubes, and would prevent the seminal fluid from mingling with the urine.

The following observations, by Dr. Smith, show the cause of liver diseases from residence in hot climates; the physical conformation not being adapted from infancy to the atmosphere, and from having been accustomed in this or other colder climates to breathe air more highly charged with oxygen:—"Pathology confirms the evidence derived from comparative anatomy and physiology. When the function of the lung is interrupted by disease, the activity of the liver is increased. In inflammation of the lung (pneumonia), in the deposition of adventitious matter in the lung (tubercles), by which the air vesicles are compressed and obliterated, the lung loses the power of decarbonizing the blood in proportion to the extent and severity of the disease with which it is affected. In this case the secretion of bile is increased. In diseases of the heart, the liver is enlarged. In the morbus cæruleus, the liver retains through life its fœtal state of disproportion. In the last place, there is a striking illustration of the respiratory action of the liver, in the vicarious office which it performs for the lung, during the heat of summer in cold, and all the year round in hot climates. In the heat of summer, and more especially in the intense and constant heat of a warm climate, in consequence of the rarefaction of the air, respiration by the lung is less active and efficient than in the winter of the cold climate. During the exposure of the body to this long-continued heat, there is a tendency to the accumulation of carbon in the blood. An actual accumulation is prevented, by an increased activity in the secretion of bile, to which the liver is stimulated by the heat. In order to obtain the material for the formation of this unusual quantity of bile, it abstracts carbon largely from the blood; to this extent it compensates for the diminished efficiency of the lung, and thus removes through the vena portæ that superfluous carbon which would otherwise have been excreted through the pulmonary artery next."

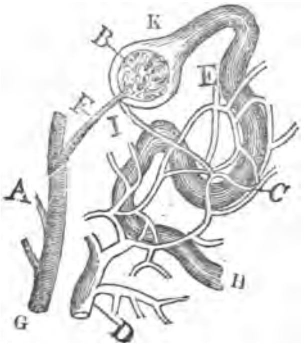


PLAN OF THE NERVES OF RESPIRATION.—(From Sir C. Bell's "Anatomy of the Human Body.")

A. Cerebrum.—B. Cerebellum.—CC. Spinal Marrow.—D. Tongue.—E. Larynx.—F. Bronchia. G. Heart.—H. Stomach.—I. Diaphragm.—J. Pons Varolii.—K. Glenoid cavity of scapula or shoulder-joint articulation of blade-bone.—1. 1. 1. Par Vagum, arising by a single set of roots, and passing to the larynx, the lungs, heart, and stomach.—2. 2. Superior laryngeal branches of the par vagum.—3. Recurrent or inferior laryngeal of the par vagum.—4. Pulmonic plexus of the par vagum.—5. Cardiac plexus of the par vagum.—6. Gastric plexus or corda ventriculi of the par vagum.—7. Fourth nerve, a branch of this system to the trochlearis muscle.—8. Respiratory nerve or portio dura to the muscles of the face, arising by a series of single roots.—9. Branches of the glosso-pharyngeal.—10. Origins of the superior external respiratory or spinal accessory nerve.—11. Branches of the last nerve to the muscles of the shoulder.—12. 12. 12. Internal respiratory, or the phrenic to the diaphragm. The origins of this nerve may be seen to pass much higher up than they are generally described.—13. Inferior external respiratory to the serratus magnus.



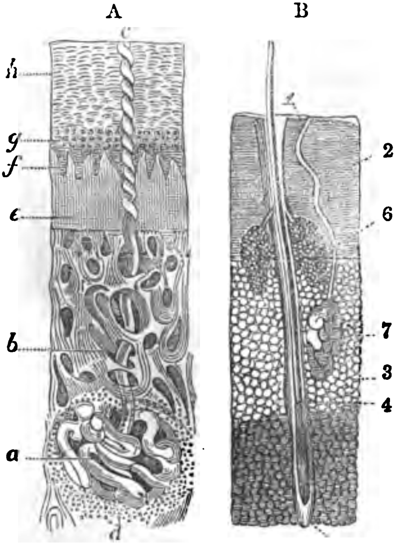
General view of the viscera of the abdomen.—**1.** Stomach raised; **2.** under surface of liver; **3.** gall-bladder; **4.** spleen; **5.** pancreas; **6.** kidneys; **7.** ureters; 8. urinary bladder; 9. portion of the intestine called duodenum; 10. portion of the intestine called rectum; 11. the aorta.—*Dr Smith.*



THE KIDNEYS.

The kidneys are situated in the back part of the body, behind the stomach, and just under the lower ribs. They are for purifying the blood, and also for carrying off the principal part of the liquid which has been taken into the stomach, and absorbed into the blood. To effect this, the blood is carried by veins into the substance of the kidneys, and there some undiscovered power extracts the urine from the blood, and along with it, impurities which, if suffered to remain in the blood, would bring on disease and death. The engraving will show the plan of the veins which circulate in the kidneys. It only shows a few of them; the number of similar ones in both kidneys can scarcely be numbered. For instance, the uriniferous tubes, H, are in bundles of twenty together. All these little suction pipes are at work at the same time, extracting the urine from the blood. G is the vein bringing the blood into the kidneys. A and B are small veins that branch off like twigs in great numbers from the main veins, and each ends in a tuft or ball of veins B. H is a uriniferous tube, one end of which, K, incloses the tuft of veins B, from which tuft it extracts the urine from the blood, and carries it down to H, and forward to large ducts which receive all the tubes, and convey their contents (urine) into the bladder. A vein, I, takes away the purified blood and unites with a number of other similar veins, E and C, which are performing the same office to other uriniferous tubes. These unite in the vein D, and carry the blood back through various intricate tubes again to the heart, to be again mixed with new material, which, after being pumped into the lungs to receive the oxygen from the air, again comes round to the same minute vessels, to be again purified. See *Kirke*, as follows:—

"SECRETION OF URINE.—The separation of urine from the blood is probably effected, like other secretions, by the agency of gland cells, and equally in all parts of the urine tubes; the urea and urid acid, and, perhaps, some of the other constituents existing ready formed in the blood, may need only separation, that is, they may pass from the blood to the urine without further elaboration; but this is not the case with some of the other principles of the urine, such as the acid phosphates and the sulphates, for these salts do not exist in the blood, and must be formed by the chemical agency of the cells. The large size of the renal arteries and veins permits so rapid a transit of the blood through the kidneys, that the whole of the blood is purified by them. The secretion of urine is rapid in comparison with other secretions, and as each portion is secreted it propels those already in the tubes onward into the pelvis. Thence through the ureter the urine passes into the bladder. Observations show how fast some substances pass from the stomach through the circulation, and through the vessels of the kidneys. Ferrocyanate of potash so passed, on one occasion, in one minute; vegetable substances, such as rhubarb, occupied from sixteen to thirty-five minutes."—*Kirke*, 339.



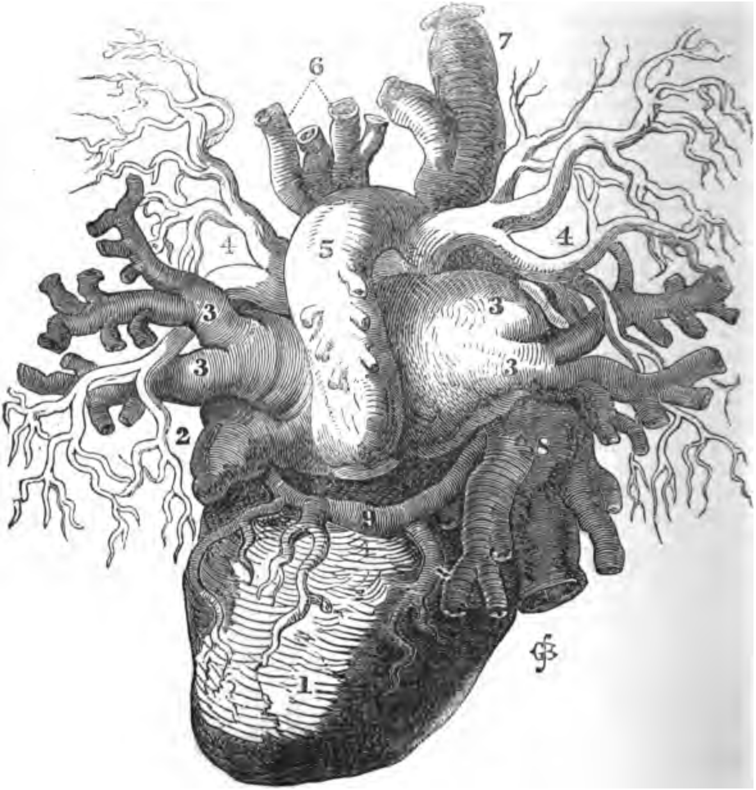
A is a sudoriferous gland; *b*, *c*, the duct, which comes out on the surface of the skin in a spiral form; it is calculated that there are 7 to 8 millions of these in the skin of the human body, measuring a total length of 28 miles, and they throw out about 2lbs. in insensible perspiration every 24 hours, besides what comes away by active perspiration; *d*, the subcutaneous cellular and adipose tissue; *e*, the derma; *f*, the papilla; *g*, the rete mucosum; *h*, the epidermis.

Sebaceous and sudoriparous glands of the skin. 1, the thin cuticle; 2, the cutis; 3, adipose tissue; 4, a hair, in its follicle (5), 6, sebaceous gland, opening into the follicle of the hair by an efferent duct; 7, the sudoriparous gland, through which the perspiration passes outwards.

SECTIONAL CUT OF THE SKIN HIGHLY MAGNIFIED.

Fig. *A*. shows the corkscrew pores of the skin, computed at eight millions in a human body, and twenty-eight miles in length; these discharge from two to three pounds of waste matter in twenty-four hours. *B* is a magnified section of the skin, showing the position and growth of a hair.

STRUCTURE OF SKIN.—Taking the skin, in the ordinary popular acceptation of the term, as the tegumentary coating of the body extending from the exterior surface to the muscles and other organs, it may be considered as consisting of three distinct layers, the innermost of which is composed of cellular and adipose matter of soft texture. The middle, called the ***true skin, derma*** or ***corium,*** is a strong and tough web of interlaced fibres, pervaded by blood-vessels, lymphatics, and nerves; and the external, called the *epidermis*, is a species of semi-transparent varnish, totally divested of all vascular or fibrous organs, and altogether insensible. The thickness of this covering, including all its three layers, though varying much in different parts of the body, nowhere exceeds a small fraction of an inch; and it will therefore be apparent that its structure can only be submitted to observation and analysis by means of the microscope.—*Lardner.*



THE HEART.—FROM SIR CHARLES BELL'S ANATOMY OF THE HUMAN BODY.

Fig. 1, left ventricle; 2, left auricle; 3, 3, 3, 3, pulmonic veins; 4, 4, two great branches of pulmonic artery; 5, aorta; 6, carotids and subclavians; 7, cava descendens; 8, cava ascendens, with all its branches from the liver; 9, great coronary vein running along the back of the heart, betwixt the auricle and ventricle, in a groove surrounded by fat.

On an average one hogshead of blood passes through the heart every hour, night and day, six ounces at every beat. Lardner says, that if a syphon gauge was inserted into an artery, a column of blood would rise in the tube to the height of seven and a half feet, so great is the force. He also says, "The arteries are flexible tubes composed of three coatings, the innermost or first of which is a thin and extremely smooth membrane lining the ventricle, and is adapted to allow free flow to the current of the blood. This tube is sheathed in another, consisting of a thick, yellowish, highly elastic substance, and of annular structure, and of involuntary muscular fibres, the rings composing it having their planes at right angles to the direction of the artery. This is again invested with an external coating of dense and close cellular texture. Thus, the structure of the arteries may be said to resemble the hose of a fire-engine.

Muscles of the Heart.—When the extensive apparatus of flexible pipes and tubes, through which the blood must be propelled from the heart to the extremities of the system, chiefly by the force imparted to it by the contractile power of the muscles surrounding the auricles and ventricles, is considered, it will be easily conceived that these muscles must be constructed with extraordinary contractile power.

MUSCLES OF THE AURICLES.

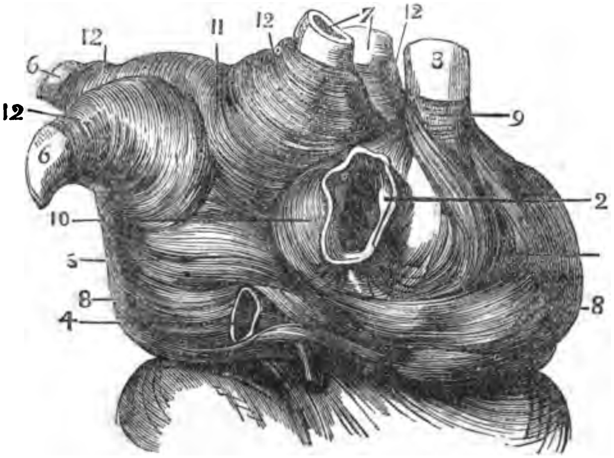
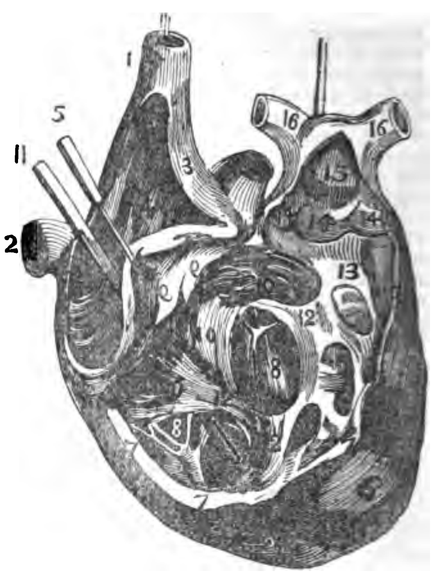


Fig. 317.*

1. Right auricle. 2. Embouchure of inferior hollow vein. 3. Embouchure of superior hollow vein. 4. Embouchure of coronary vein in right auricle. 5. Left auricle. 6, 6. Left pulmonary veins. 7, 7. Right pulmonary veins. 8, 8. Muscles surrounding right and left auriculo-ventricular orifices. 9. Muscles surrounding embouchure of superior vena cava. 10. Muscles surrounding embouchure of inferior vena cava. 11. Muscles separating right from left pulmonary veins. 12, 12, 12, 12. Muscles surrounding embouchures of these veins.—*Dr. Lardner. In rheumatic fever these muscles are often affected from the action of medicine and blisters, weakening the whole system; and hence the frequency of heart disease after rheumatic fever.*

* Sappey.



View of the heart, with the great vessels in connexion with it, on the right side, its different chambers being laid open, and its structure shown. 1. The vena cava superior. 2. The vena cava inferior. 3. Cut edge of the right auricle turned aside to show, 4, the cavity of the right auricle, into which the two venæ cavæ pour the blood returned from all parts of the body. 5. Hook suspending the reflected portion of the wall of the auricle. 6. The right ventricle. 7. Cut edge of the wall of the ventricle, a portion of which has been removed to show, 8, the cavity of the ventricle. 9. Situation of the opening between the auricle and ventricle, called the auricular orifice of the ventricle. 10. Valve placed between the auricles and ventricles, one margin being firmly tached to the auriculo-ventricular opening in its entire extent, the other lying loose in the cavity of the ventricle. 11. Probe passed from the auricle into the ventricle underneath the valve, showing the course of the blood from the former chamber to the latter. 12. The columnæ carneæ attached by one extremity to the walls of the ventricle, the other extremity ending in tendinous threads attached to the loose margin of the valve. 13. Passage to the pulmonary artery. 14. The three semilunar valves placed at the commencement of, 15, the pulmonary artery. 16. The two great branches into which the trunk of the pulmonary artery divides, one branch going to each lung.—*Dr. Smith.* A membranous bag, called the pericardium, contains the heart; see page 387.

The following is from Dr. Smith:—"No one is able by a voluntary effort to expel the whole contents of the lungs. Observation and experiment lead to the conclusion that the lungs, when moderately distended, contain at a medium about twelve pints of air. As one pint is inhaled at an ordinary inspiration, and somewhat less than the same volume is expelled at an ordinary expiration, there remain present in the lungs, at a minimum, eleven pints of air. There is one act of respiration to four pulsations of the heart; and, as in the ordinary state of health there are seventy-two pulsations, so there are eighteen respirations in a minute, or 25,920 in the twenty-four hours. About two ounces of blood are received by the heart at each dilatation of the auricles; about the same quantity is expelled from it at each contraction of its ventricles; consequently, as the heart dilates and contracts seventy-two times in a minute, it sends thus often to the lungs, there to be acted upon by the air, two ounces of blood. It is estimated by Haller that 10,527 grains of blood occupy the same space as 10,000 grains of water; so that if one cubic inch of water weighs 253 grains, the same bulk of blood will weigh 266¼ grains. It is ordinarily estimated that on an average one circuit of the blood is performed in 150 seconds; but it is shown that the quantity of air always present in the lungs contains precisely a sufficient quantity of oxygen to oxygenate the blood, while flowing at the ordinary rate of seventy-two contractions of the heart per minute, for the exact space of 160 seconds. It is therefore highly probable that this interval of time, 160 seconds, is the exact period in which the blood performs one circuit, and not 150 seconds, as former observations had assigned. If this be so, then 540 circuits are performed in the twenty-four hours; that is, there are three complete circulations of the blood through the body in every eight minutes of time. But it has been shown that the weight of the blood is to that of water as 1.0527 is to unity, and that, consequently, 10,527 grains of blood are in volume the same as 10,000 grains of water. From this it results that if in the human adult two ounces of blood are propelled into the lungs at each contraction of the heart, that is, seventy-two times in a minute, there are in the whole body precisely 384 ounces, or twenty-four pounds avoirdupois, which measure 692.0657 cubic inches, or within one cubic inch of twenty imperial pints, which measure 693.1847 cubic inches. By an elaborate series of calculations from these data Mr. Finlaison has deduced the following general results:—1. As there are four pulsations to one respiration, there are eight ounces of blood, measuring 14.418 cubic inches, presented to 10.5843 grains of air, measuring 34.24105 cubic inches. 2. The whole contents of the lungs is equal to a volume of very nearly 411 cubic inches full of air, weighing 127 grains, of which 29.18132 grains are oxygen. 3. In the space of five-sixth parts of one second of time, two ounces or 960 grains weight of blood, measuring 3⅗ or 3.60451 cubic inches are presented for aëration. 4. Therefore the air contained in the lungs is 114 times the bulk of the blood presented, while the weight of the blood so presented is 7½ times as great as the weight of the air contained. 5. In one minute of time the fresh air inspired amounts to 616⅛ cubic inches, or, as nearly as may be, eighteen pints, weighing 190½ grains. 6. In one hour the quantity inspired amounts to 1066⅔ pints, or 2 hogsheads, 20 gallons, and 10⅔ pints, weighing 23¾ ounces and 31 grains. 7. In one day it amounts to 57 hogsheads, 1 gallon, and 7¼ pints, weighing 571½ ounces and 25 grains. 8. To this volume of air there are presented for aëration in one minute of time 144 ounces of blood, in volume 259½ cubic inches, which is within 18 cubic inches of an imperial gallon; 9, in one hour 540 pounds avoirdupois, measuring 449¼ pints, or 1 hogshead and 1¼ pints; and 10, in the twenty-four hours, in weight 12,960 pounds; in bulk 10,782½ pints, that is, 24 hogsheads and 4 gallons. 11. Thus, in round numbers, there flow to the human lungs every minute nearly 18 pints of air (besides the 12 pints constantly in the air vesicles) and nearly 8 pints of blood; but in the space of twenty-four hours, upwards of 57 hogsheads of air and 24 hogsheads of blood."

The following is from Dr. Smith:—"All the arteries of the body proceed from two trunks; that connected with the pulmonic circle—the pulmonary artery, and that connected with the systemic circle—the aorta. These vessels, as they go out from the heart and proceed to their ultimate termination, are arborescent, that is, they successively increase in number and diminish in size, like the branches of a tree going off from the trunk. Each trunk usually ends by dividing into two or more branches, the combined area of which is always greater than that of the trunk from which they spring, in the proportion of about one and a half to one. As the branch proceeds to its ultimate termination it divides and subdivides, until at length the vessel becomes so minute, that it can no longer be distinguished by the eye. These ultimate branches are called capillary vessels, from their hair-like smallness (Fig. 119, 4); but this term does not adequately express their minuteness. It has been stated that the red particle of the blood, at the medium calculation, is not more than the three-thousandth part of an inch in diameter; yet vast numbers of the capillary vessels are so small that they are incapable of admitting one of these particles, and receive only the colourless portion of the blood. Every portion of an artery, by reason of the elasticity of its coats, preserves nearly a cylindrical form; and as the area of the branches is greater than that of the trunks, the blood, in proceeding from the heart to the capillaries, though passing through a series of descending cylinders, is really flowing through an enlarging space. The disposition of the veins, like that of the arteries, is arborescent, but in an inverse order; for the course of the veins is from capillary vessels to visible branches, and from visible branches to large trunks (Fig. 120, 1, 2, 3). In every part of the body where the capillary arteries terminate the capillary veins begin, and the branches uniting to form trunks, and the small to form large trunks, and the trunks always advancing towards the heart, and always increasing in magnitude as they approach it, form at length the two veins which, it has been stated, return all the blood of the body to the right auricle of the heart. The veins are very much more numerous than the arteries, for they often consist of double sets, and they are at the same time more capacious and more extensible. Reckoning the whole of the blood at one-fifth of the weight of the body, it is estimated that, of this quantity, about one-fourth is in the arterial and the remaining three-fourths in the venous system. The combined area of the branches of the veins is much greater than that of the two trunks in which they terminate (Fig. 120, 1, 2, 3, 4): the blood, therefore, in returning to the heart, is always flowing from a large into a smaller space. The divisions and subdivisions of the artery freely communicate in all parts of the body by means of what are called anastomosing branches, and this communication of branch with branch and trunk with trunk is termed anastomosis. The

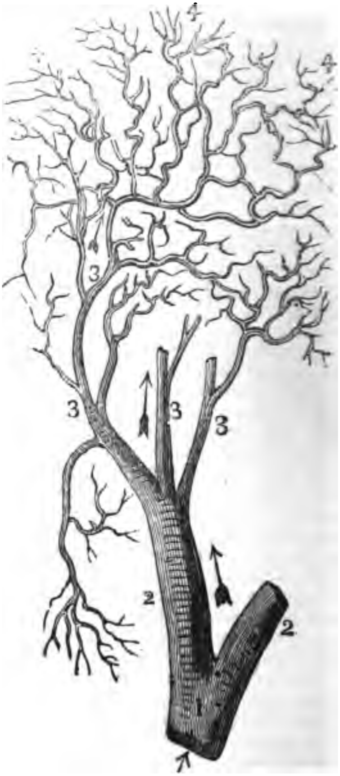


Fig. 119.

View of the manner in which an artery divides and sub-divides into its ultimate branches. 1, trunk of the artery; 2, large branches into which it subdivides; 3, small branches, successively becoming smaller and smaller, until they terminate in, 4, the capillary branches.

same intercommunication, but with still greater freedom and frequency, takes place among the branches of the veins. In both orders of vessels the communication is frequent in proportion to the minuteness of the branch and its distance from the heart. It is also more frequent in proportion as a part is exposed to pressure; hence the minute arteries and veins about a joint are distinguished for the multitude of their anastomosing branches; and above all, it is frequent in proportion to the importance of the organ; hence the most remarkable anastomosis in the body is in the brain. By this provision care is taken that no part be deprived of its supply of blood; for if one channel be blocked up, a hundred more are open to the current, and the transmission of it to any particular region or organ by two or more channels, instead of through one trunk, is a part of the same provision. Thus the fore-arm possesses four principal arteries with corresponding veins, and the brain receives its blood through four totally independent canals."

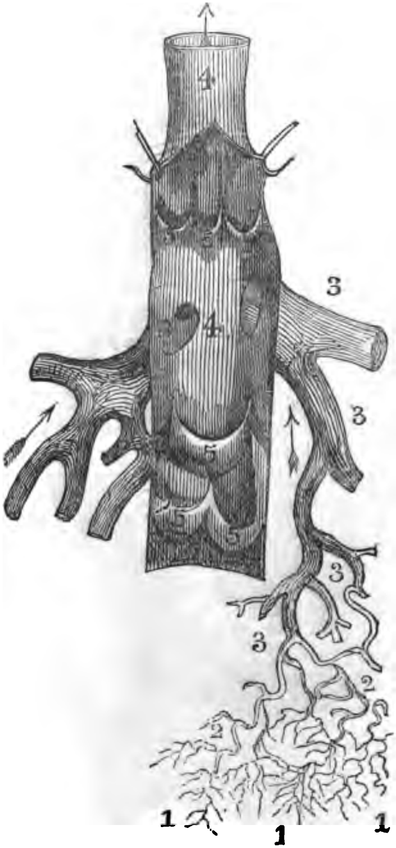
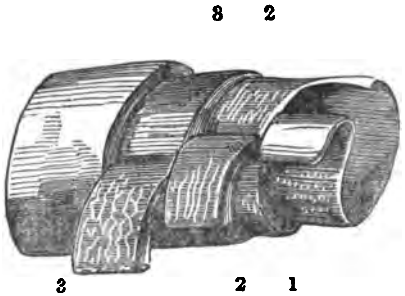


Fig. 120.

View of the manner in which the minute branches of the vein unite to form the larger branches and the trunks. 1, capillary venous branches; 2, small branches formed by the union of the capillary; 3, larger branches formed by the union of the smaller, and gradually increasing in size, to form the great trunk; 4, a portion of which is laid open to show its inner surface and the arrangement of, 5, the valves formed by its inner coat.

Fig. 118.



Portion of an artery, showing the several coats of which it is composed separated from each other. 1, the internal or serous coat; 2, the middle or fibrous coat; 3, the external or cellular coat.—*Dr. Smith.*

General Ramifications of the Blood-vessels.—As has been already observed, the arteries and veins distribute themselves in innumerable ramifications from the heart, through all parts of the body. They spread through the muscles, amid whose fibres they ramify; and penetrate the very bones, whose structure is filled with them. We have already given, in Fig. 314, a general view of the manner in which the arteries ramify; and the veins differ from the arrangement there represented only in this, that while the larger arteries are generally confined to certain depths within the surface, veins of large size ramify superficially also in immense numbers, so as to be rendered visible in various parts of the body as blue lines seen through the semi-transparent texture of the epidermis, or superficial skin.

It may be here stated that the skin, properly so called, is that covering having a

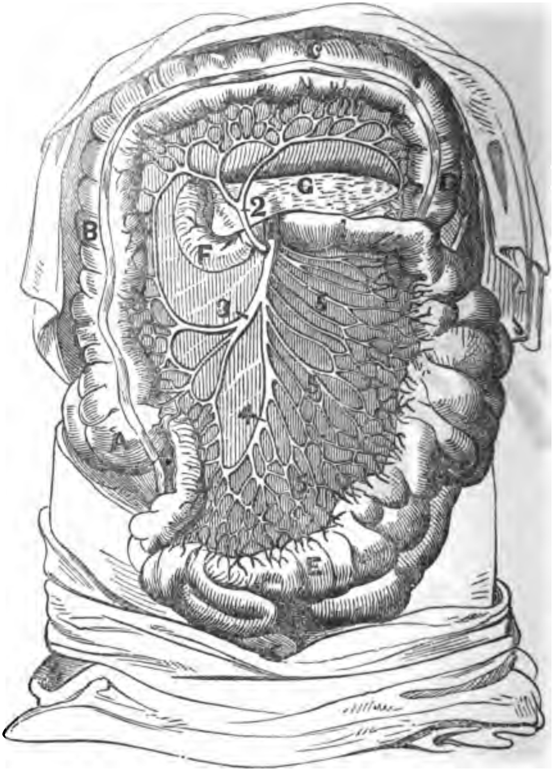


Fig. 328.—BLOOD-VESSELS OF THE MESENTERY.

very sensible thickness, which is taken between the fingers when we pinch the surface of the body, as, for example, the back of the hand or the neck. This consists of two distinct parts; the inner and thicker part, called the true skin, *cutis* or *derma*, a Greek word signifying the skin; and the superficial or thinner part, called the *cuticle*, *epidermis*, or covering of the skin, from a Greek word ἐπὶ (*epi*), signifying *upon* or *over*. The membrane thus named is

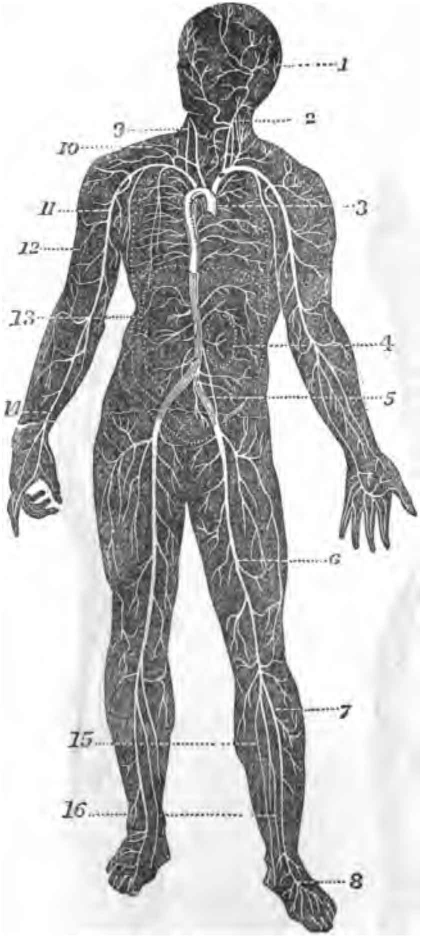


Fig. 315.—*Lardner*.

THEORETICAL DIAGRAM OF THE ARTERIAL OR PURE BLOOD CIRCULATION; THE VENOUS OR EXHAUSTED BLOOD RETURNS TO THE HEART BY ANOTHER SET OF VEINS.

The following is from Dr. Lardner's beautiful work, which should be in every library; it is very cheap, price 10s., with its 520 finely executed engravings.

Fig. 1, temporal artery; 2, carotid do.; 3, aorta do.; 4, renal do.; 5, iliac do.; 6, femoral do.; 7, anterior tibial do.: 8, tarsal do.; 9, vertebral do.; 10, subclavian do.; 11, axillary do.; 12, brachial do.; 13, cœliac do.; 14, radial do., 15, posterior tibial do.; 16; peroneal do.

GENERAL VIEW OF THE ARTERIAL SYSTEM. — From the upper part of the crook of the aorta branches diverge, two of which, bending under the clavicles, descend along the arms, taking the name of the brachial arteries; and at the point where the aorta descends towards the navel, other branches diverge right and left, descending along the legs, where they take the name of femoral arteries. There are numerous other ramifications, as shown in the general illustration of the arterial system, where the names of the principal arteries are indicated. (*See Observations on the Circulation, page* 23 *of this book.*)

that which is raised and separated from the derma by a blister. Although it would be impossible to give, in a work like the present, figures which would convey any notion of the local distribution of the blood-vessels through the body, other than the general representation of the arterial system given in Fig. 314, it may, nevertheless, be interesting to readers who are not professionally medical, to see the wonderful structure of the vascular system in some of the principal parts of the human economy.

Blood-vessels of the Mesentery.—In Fig. 328 are represented the trunk (1) and the innumerable ramifications and anastomoses (2, 3, 4, 5) of the artery which spreads over the *mesentery*, a membranous structure connected with the intestines.

BLOOD-VESSELS OF THE LEG AND FOOT.

In like manner, in Fig. 332, are represented the principal arteries, and in Fig. 333 the principal veins, which ramify over the leg and foot.

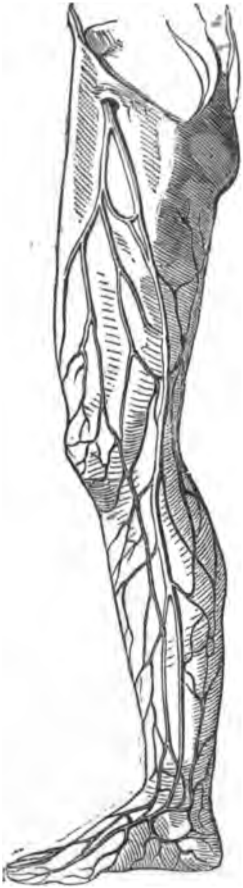


Fig. 332

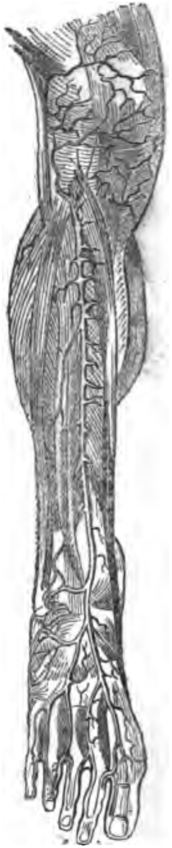


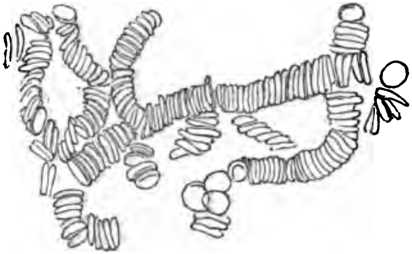
Fig. 333.

All the animal and saline matter held in solution in the serum being removed the fluid that remains is water, the proportion of which in 1000 parts varies from

853, the maximum, to 779, the minimum. The second constituent of the blood, the fibrin, is the most essential portion of it, being invariably present, whatever other constituents be absent. While circulating in the living vessel, fibrin is fluid and transparent; by the process of coagulation, it is converted into a solid and opaque substance of a yellowish white colour, consisting of stringy fibres, disposed in striæ, which occasionally form a complete network (Fig. 111). These fibres are exceedingly elastic. In their general aspect and their chemical relations they bear a close resemblance to pure muscular fibre, that is, to muscular fibre deprived of its enveloping membrane and of its colouring matter, and they form the basis of muscle. According to M. le Canu, the proportion of the fibrin varies from seven parts in 1000, the maximum, to one part in 1000, the minimum, the medium of twenty experiments being four parts in 1000.

The third constituent of the blood, the matter upon which its red colour depends, though, as has been stated, entirely absent in certain classes of animals, and in all animals in some parts of their body, seems to be essential, at least to the organic organs, whenever they perform their functions with a high degree of perfection. Thus in the lowest class of vertebrated animals, the fish, while the principal part of its body receives only a colourless fluid, its organic organs, as the heart, the gills, the liver, are provided with red blood. The red matter, wherever present, is invariably heavier than the fibrin, and consequently, during the process of coagulation, it gradually subsides to the lower surface, and is always found forming the bottom of the clot. Its proportion to the other constituents varies very remarkably, the maximum being 148, the minimum 68, and the medium 108, in 1000 parts of blood.

From Dr. Smith.—"The red particle of the human blood is circular. It is circular also in all animals belonging to the class mammalia; but in the three lower classes of vertebrated animals, the bird, the reptile, and the fish, it is elliptical.



Columnar arrangement which the particles of the human blood assume immediately after it is drawn from its vessel.

Fig. 113.

"When perfect and entire, the red particles indicate a disposition to arrange themselves in a definite mode. They combine spontaneously into columns of variable length. In order to observe this tendency, a small quantity of blood, the moment it is taken from its living vessel, should be placed between two strips of glass, or covered with a bit of talc, and placed under the microscope. When thus arranged, a considerable agitation at first takes place among the particles. As soon as this motion subsides, the particles apply themselves to each other by their broad surfaces, and thus form piles or columns of considerable length (Fig. 113). The columns often again combine one among another, the end of one being attached to the side of another, sometimes producing very curious ramifications (Fig. 113). In like manner, the elliptical particles apply themselves to each other by their broad surfaces, but they are not so exactly matched as the circular, one particle partially overlapping another, so that they form less regular columns than the circular.

"The red particles, as far as is known, constitute a distinct and peculiar form of animal matter: the red colour, according to some, depending on an impregnation of iron; according to others, on an animal substance of a gelatinous nature. The exact proportion of the different substances contained in the blood, according to the most recent analysis of it, that by M. le Canu, is as follows, namely:—

Water	786·500
Albumen . . .	69·415
Fibrin	3·565
Colouring matter . .	119·626
Crystallizable fatty matter .	4·300
Oily matter . . .	2·270
Extractive matter, soluble in alcohol and water .	1·920
Albumen combined with soda	2·010
Chloruret of sodium and potassium, alkaline phosphate, sulphate, and subcarbonates . .	7·304
Subcarbonate of lime and magnesia, phosphates of lime, magnesia and iron, peroxide of iron . .	1·414
Loss	2·586
	1000·000

"From the results of this analysis it is manifest that all the proximate principles of which the different tissues are composed exist in the blood, namely, albumen, the proximate principle forming the basis of membrane; fibrin, the proximate principle forming the basis of muscle; fatty matter, forming the basis of nerve and brain; and various saline and mineral substances, forming a large part of bone, and entering more or less into the composition of every fluid and solid."—*Dr. Smith.*

VEIN.—(*Dr. Hooper.*) *Vena.* A long membranous canal, which does not pulsate, and returns the blood from the arteries to the heart. All veins originate from the extremities of arteries, or, more properly speaking, from the capillary vessels which connect the arteries and veins, and terminate in the auricles of the heart; *e. g.* the venæ cavæ in the right, and the pulmonary veins in the left auricle. They are composed, like arteries, of three tunics or coats, which are much more slender than in the arteries, and are supplied internally with semilunar membranes, or folds, called valves. The blood is returned from every part of the body, except the lungs, into the right auricle, from three sources:—1. The *vena cava superior,* which brings it from the head, neck, thorax, and superior extremities. 2. The *vena cava inferior,* from the abdomen and inferior extremities. 3. The *coronary vein* receives it from the coronary arteries of the heart. 1. The *vena cava superior.* This vein terminates in the superior part of the right auricle, into which it evacuates the blood from the *right* and *left subclavian vein,* and the *vena azygos.* The right and left subclavian veins receive the blood from the head and upper extremities, in the following manner:—The veins of the fingers, called *digitals,* receive the blood from the digital arteries, and empty it into the *cephalic of the thumb,* which runs on the back of the hand along the thumb, and evacuates itself into the external radial. The *salvatella,* which runs along the little finger, unites with the former, and empties its blood into the internal and external cubital veins. At the end of the fore-arm are three veins, called the great cephalic, the basilic, and the median. The *great cephalic* runs along the superior part of the fore-arm, and receives the blood from the external radial. The *basilic* ascends on the under side, and receives the blood from the *external* and *internal cubital veins,* and some branches which accompany the brachial artery, called *venæ satellites.* The *median* is situated in the middle of the fore-arm, and arises from the union of several branches. These three veins all unite above the bend of the arm, and form the *brachial vein,* which receives all their blood, and is continued into the axilla, where it is called the *axillary vein.* This receives also the blood from the scapula, and superior and inferior parts of the chest, by the *superior* and *inferior thoracic vein,* the *vena muscularis,* and the *scapularis.* The axillary vein then passes under the clavicle, where it is called the *subclavian,* which unites with the external and internal jugular veins and the vertebral vein, which brings the blood from the vertebral sinuses; it receives also the blood from the *mediastinal*, *pericardiac*, *diaphragmatic*, *thymic*, *internal mammary*, and *laryngeal veins*, and then unites with its fellow, to form the vena cava superior, or, as it is sometimes called, *vena cava descendens*. The blood from the external and internal parts of the head and face is returned, in the following manner, into the external and internal jugulars, which terminate in the subclavians:—The *frontal*, *angular*, *temporal*, *aricular*, *sublingual*, and *occipital* veins receive the blood from the parts after which they are named; these all converge to each side of the neck, and form a trunk called the *external jugular vein*. The blood from the brain, cerebellum, medulla oblongata, and membranes of these parts, is received into the lateral sinuses, or veins of the dura mater, one of which empties its blood through the foramen lacerum in basii cranii on each side into the *internal jugular*, which descends in the neck by the carotid arteries, receives the blood from the *thyroideal* and *internal maxillary veins*, and empties itself into the subclavians within the thorax. The vena azygos receives the blood from the *bronchial*, *superior*, *æsophageal*, *vertebral*, and *intercostal veins*, and empties it into the superior cava. 2. *Vena cava inferior*. The vena cava inferior is the trunk of all the abdominal veins, and those of the lower extremities, from which parts the blood is returned in the following manner. The veins of the toes, called the *digital veins*, receive the blood from the digital arteries, and form on the back of the foot three branches, one on the great toe, called the *cephalic*, another which runs along the little toe, called the *vena saphena*, and a third on the back of the foot, *vena dorsalis pedis;* and those on the sole of the foot evacuate themselves into the *plantar veins*.

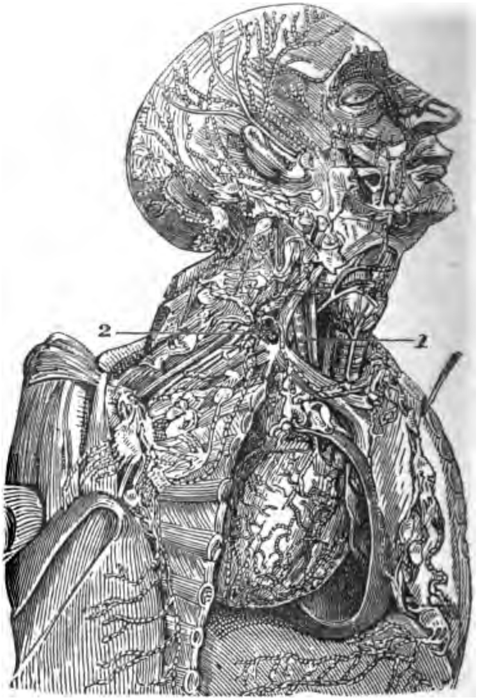
The three veins on the upper part of the foot, coming together above the ankle, form the *anterior tibial;* and the plantar veins, with a branch from the calf of the leg, called the *sural vein*, form the *posterior tibial;* a branch also ascends in the direction of the fibula, called the *peroneal vein*. These three branches unite before the ham into one branch, the *subpopliteal vein*, which ascends through the ham, carrying all the blood from the foot: it then proceeds upon the anterior part of the thigh, where it is termed the *crural* or *femoral vein*, receives several muscular branches, and passes under Poupart's ligament into the cavity of the pelvis, where it is called the *external iliac*. The arteries which are distributed about the pelvis evacuate their blood into the *external hæmorrhoidal veins*. the *hypogastric veins*, the *internal pudendal*, the *vena magna ipsius penis*, and *obturatory veins*, all of which unite in the pelvis, and form the *internal iliac vein*. The external iliac vein receives the blood from the external pudendal veins, and then unites with the internal iliac at the last vertebra of the loins, forming the *common iliac;* the two common iliacs then form the *vena cava inferior*, or *ascendens*, which ascends on the right side of the spine, receiving the blood from the *sacral*, *lumbar*, *emulgent*, *right spermatic veins*, and the *vena cava hepatica;* and, having arrived at the diaphragm, it passes through the right foramen, and enters the right auricle of the heart, into which it evacuates all the blood from the abdominal viscera and lower extremities.

Vena cava hepatica.—This vein ramifies in the substance of the liver, and brings the blood into the vena cava inferior from the branches of the *vena portæ*, a great vein which carries the blood from the abdominal viscera into the substance of the liver. The trunk of the vena portæ, about the fissure of the liver, in which it is situated, is *divided* into the hepatic and abdominal portions. The *abdominal portion* is composed of the *splenic*, *meseraic*, and *internal hæmorrhoidal veins*. These three venous branches carry all the blood from the stomach, spleen, pancreas, omentum, mesentery, gall-bladder, and the small and large intestines, into the *sinus* of the vena portæ. The *hepatic portion* of the vena portæ enters the substance of the liver, divides into innumerable ramifications, which secrete the bile, and the superfluous blood passes into corresponding branches of the *vena cava hepatica*.

The *action of the veins*.—Veins do not pulsate: the blood which they receive from the arteries flows through them very slowly, and is conveyed to the right auricle of the heart, by the contractility of their coats, the pressure of the blood from the arteries, called the *vis à tergo*, the contraction of the muscles, and respiration; and it is prevented from going backwards in the vein by the valves, of which there are a great number.

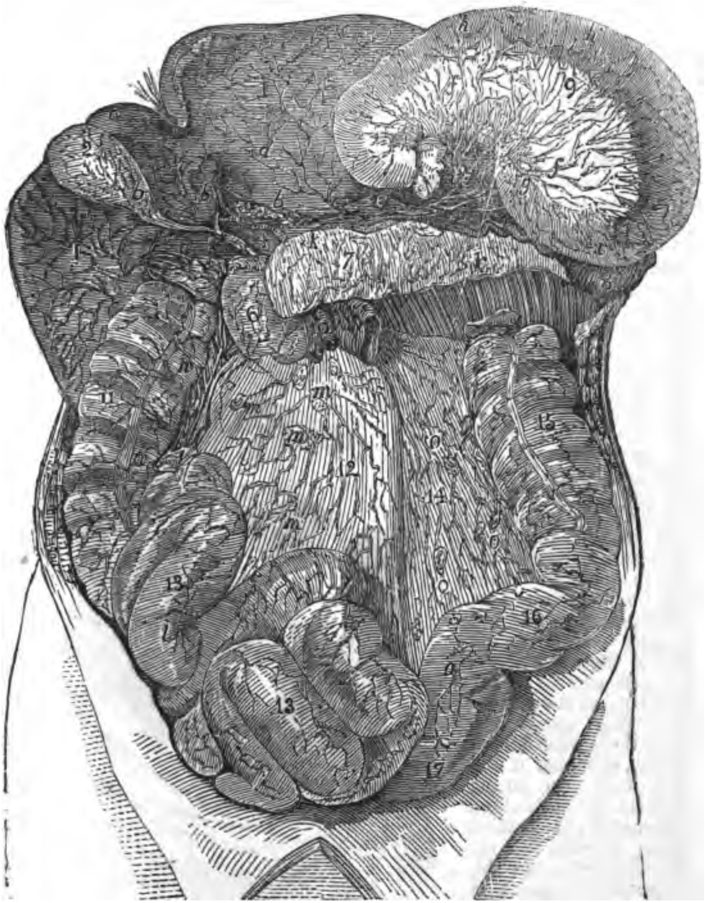
Pulse. *Pulsus.* The beating of the heart and arteries.—The pulse affords most important indications in the diagnosis, prognosis, and treatment of disease. It is usually felt by pressing the radial artery at the wrist; and some skill and experience are requisite in the application of the fingers, in order to derive all the information which the pulse is capable of affording. In the healthy subject, the pulse is very various in force and frequency, according to the constitution of the individual; it also differs greatly at different periods of life, in a general way diminishing in frequency from infancy to old age. The pulse is generally more frequent in women, and persons of an irritable temperament, than in males and those who have less mobility of system. The following is the usual number of pulsations in a minute at different periods of life:—one year, 120 to 130; five or six years, 100 to 106; seven years, 90 to 95; puberty, 80; adult age, 65 to 75; sixty years, 60; old age, 50.

Sources of Lymph.—The liquid part of the blood, called the *liquor sanguinis*, or *plasma*, charged with nutritive principles, exudes by the process of exosmose through the coats of the capillaries, and being diffused among the tissues, supplies to them respectively the matters proper for their repair. The residuum of the plasma is absorbed by the multitude of lymphatics which pass through the same parts, into which it enters by the process of endosmose. In this state it constitutes lymph, and is carried back by the lymphatic vessels to the subclavian veins. — *Dr. Lardner*.



LYMPHATICS OF THE UPPER PART OF THE TRUNK AND HEAD.

Structure of the Lymphatic Glands.—It was formerly supposed that, in passing through the glands, the lymphatics entered into direct communication with the blood-vessels. The researches of modern physiologists have proved this to be an error. A lymphatic gland consists of a mass of minute lymphatic vessels, among which numerous sanguiferous capillaries (blood-vessels) ramify. Between the two sets of vessels there is no inosculation. They conduct their respective fluids altogether independently of each other. The lymph which passes into the gland by the afferent vessels, passes out of it by the efferent ones, having in the gland been infinitely subdivided by the minute and multiplied tubes which form the substance of the gland. Whether there is any interchange between the blood of the capillaries in the gland by exudation or exosmose and the lymph of the smaller lymphatic vessels, is mere matter of conjecture, unsupported as yet by any results of immediate observation.

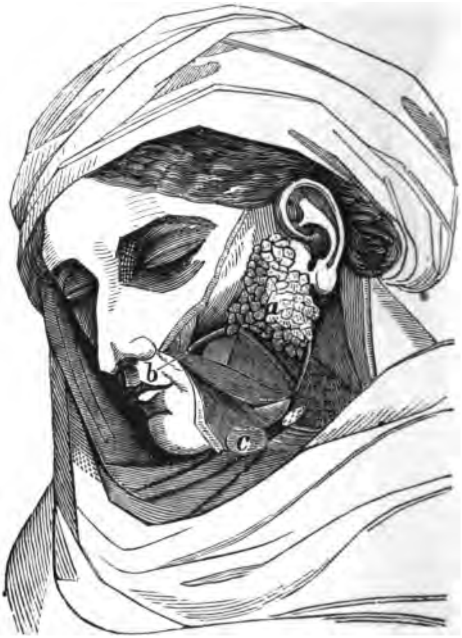


ABSORBENTS AND LYMPHATICS. (*From Quain and Wilson.*)

Nos. 1, 1, the under surface of the liver; 2, the gall-bladder; 3, the ductus communis choledochus; 4, the portal vein; 5, the hepatic artery; 6, the descending portion of the duodenum; 7, the pancreas; 8, the lower part of the spleen projecting below the great end of the stomach; 9, the stomach; 10, the superior mesenteric artery and vein resting upon the transverse portion of the duodenum; 11, the ascending colon; 12, the mesentery; 13, the small intestines; 14, the layer of peritoneum which connects the descending colon to the posterior wall of the abdomen; 15, the descending colon; 16, the sigmoid flexure; 17, the rectum.

a, a group of lymphatics from the right lobe of the liver, passing to its posterior border to terminate in the commencement of the thoracic duct; *b*, *b*, a second group from the gall-bladder and middle portion of the liver, proceeding along the course of the hepatic vessels between the layers of the lesser omentum; *c*, one or two lymphatic trunks passing to the upper surface of the liver; *d*, *d*, lymphatics from the left lobe passing to the coronary glands, *e*, *e*; *f*, *f*, lymphatics from the stomach converging to the group of glands, *g*, *g*, placed along the concave border of the organ; *h*, *h*, lymphatics converging to the glands on convex border of the stomach; *i*, lymphatics from the great end of the stomach descending to the splenic glands; *k*, *k*, pancreatic lymphatic vessels; *l*, *l*, lacteal vessels originating upon the surface of the small intestine, and converging to the root of the mesentery; *m*, *m*, mesenteric glands; *n*, *n*, lymphatic vessels from the ascending colon terminating in glands along its fixed border; *o*, *o*, lymphatics and glands from the descending colon converging towards the vertebral column and root of the mesentery.

FORMATION OF SALIVA FOR THE MOUTH.—In the oral cavity, on each side, near the second double tooth in the upper jaw, the mucous membrane forms a little tube (*b*), which ascends along the cheek, and branches out and forms a gland in front of the lower part of the ear (*a*). Another smaller one of these glands lies just within the lower edge of the under jaw, on each side (*c*); and a third and still smaller pair lie under the roots of the tongue, uniting on the middle line. The ducts of these last two pairs open into the mouth in front of the roots of the tongue and near its bridle. These are called the salivary glands. They secrete the saliva or the solvent fluid of the mouth, and pour it into the oral cavity freely during the process of mastication, and whenever any exciting substance is taken into the mouth. The smell, and sight, and even the thoughts of savory or disgusting substances, and of other objects of desire, will also cause an increased secretion and flow of saliva.—*Graham.*



a, the salivary gland in the cheek; *b*, the duct leading to the mouth; *c*, the gland under the edge of the under jaw.

The following is also from Lardner's Animal Physics:—*Beautiful Structure of the Lymphatics.*—There is no part of the organization the structure of which presents a spectacle more curious and beautiful than the lymphatics. We shall, therefore, give here some examples of their structure. In Fig. 347 are shown the chyliferous vessels of the *mesentery*. These are spread over the intestines on the side, whence they absorb the chyle, and, passing over the mesentery, are transmitted through a multitude of glands from which larger vessels issue, which eventually terminate in the thoracic duct.

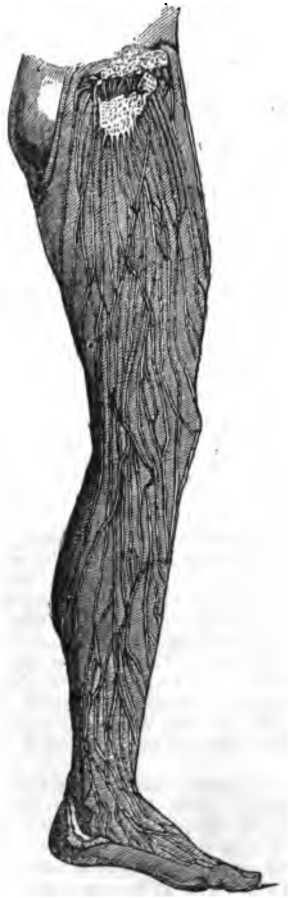


Fig. 350.
LYMPHATICS OF THE LEG AND FOOT (Mascagni).

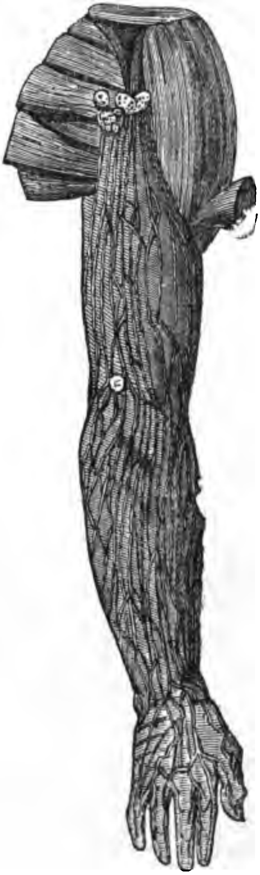


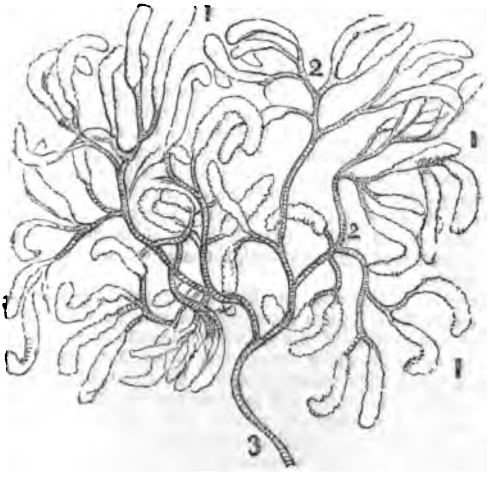
Fig. 349.
LYMPHATICS OF THE ARM AND HAND (Mascagni).

The Lymphatics of all Vertebrate Animals of the inferior classes are similar to those of man. In the case of certain reptiles—the frog, for example—their structure is often more complicated than in warm-blooded animals. In the course of the lymphatic vessels of these are found certain enlargements, provided with muscular fibres, which have been called *lymphatic hearts*, whose contraction produces the same effects in propelling the lymph as the heat produces upon the circulation of the blood. In both reptiles and fishes the lymphatic vessels are relatively more voluminous than in Mammifers or birds. Lymphatic glands, however, are generally absent in these classes. The valves are less numerous, and in some cases altogether absent. In the larger class of Mammifers, the lymphatic and chyliferous vessels converge in a single thoracic duct, as in man. Frequently, however, this canal consists of two ducts, which remain separate up to the point where they enter the left subclavian vein. In other cases, although the thoracic duct is double in its pectoral part, and as far as the commencement of the cervical part, the two branches unite at the moment of joining the venous system.—*The Lymphatic Vessels of Birds* form by their union two thoracic ducts, which appear on each side of the base of the neck, uniting with the jugular veins.—*The Lymphatics of Reptiles and Fishes* terminate in the venous system by communications more or less numerous. The most frequent and largest of these communications are made with veins in the immediate neighbourhood of the head. In mammifers generally, the lymphatic glands are numerous, and it is probable that they have no direct communication with the venous system. *The Invertebrate Classes* have neither chyliferous nor lymphatic vessels. There is no proper distinction between the blood and the product of digestion, or it may rather be said that this product constitutes the blood itself. In those which have a complete circulating apparatus with arteries distinct from the veins—such, for example, as the mollusca—it is probable that the veins which circulate over the intestines absorb the products of digestion, and transfer them to the region of the respiratory organs. In arachnida, crustacea, and annelida, whose apparatus of circulation is less complete, the product of digestion passes through the coats of the intestines, and is diffused through the regions which surround the digestive canal, and from thence, by imbibition and endosmose, is transmitted to the circulatory vessels.—*In Insects* the liquid product of digestion, after it has passed the coats of the digestive tube, does not pass into any circulating vessels properly so called; it is merely diffused through the cellular interstices which exist among the organs, and thence into the organs themselves.—*Radiata*, expecting the echini and holothuria, have no vascular system, and the products of digestion pass through the sides of the digestive cavities directly into the tissues. The acalephæ, which belong to this class, and which have the form of fungi, present a remarkable arrangement. The digestive cavity in these presents a multitude of parts, forming a complicated network, and the products of digestion escape through the sides of these minute reticulated intestinal tubes, their dispersion through the system being thus facilitated.

ABSORBING APPARATUS OF DIGESTIVE CANAL.—The body, as we have seen, receives the matter necessary for its repair chiefly by the absorption of the intestinal canal. The structure and form of the coats of the stomach and the smaller intestine are eminently adapted to promote this purpose. The innumerable glands or equivalent organs which are spread over their internal surface, penetrating their structure, and communicating with the veins and lymphatics, have been already explained. Their form is not less adapted to promote this absorption. The internal surface of the stomach of an adult person measures about 100 square inches; and, taking the average diameter of the small intestine at an inch and a quarter, and its length at twenty feet, the magnitude of its internal surface will be in round numbers, 1000 square inches, or something more than six square feet. This vast surface, combined with its peculiar structure, will easily explain the celerity with which liquid matter flowing from the stomach through the intestine is transported through the circulation.—*Lardner.*

THE ABSORBING VESSELS, considered as a system or whole, are divisible into two sets: 1, those which return the chyle from the alimentary canal; and 2, those which take up the lymph or residue of nutrition from all the other parts of the body: both are connected in their course with ganglia or glands. The chyle vessels, by their union, form a large trunk (thoracic duct), which is a common reservoir for receiving their contents, as well as those of the lymphatics, which come from both the lower extremities,—from the cavity of the abdomen and its viscera, except the right lobe of the liver,—from the walls of the abdomen at both sides, and from the surface of the left side of the thorax,—from the left lung, the left side of the heart, and left side of the diaphragm,—from the left upper extremity, and from the corresponding side of the head and neck. But the lymphatic vessels, which arise from the right upper extremity, the right side of the head and neck, from the right lung, and from the corresponding half of the liver and diaphragm, pour their contents, by a short trunk, into the conflux of the right subclavian and internal jugular veins. This vessel may be called the right lymphatic duct; it is commonly named the right thoracic duct, though no part of it lies within that cavity. The duct of the left side is not entirely thoracic; for its commencement is in the abdomen, and its termination in the neck.

Dr. Smith on the Secretory Organs.—In the construction of the secreting apparatus, membrane, then, may be said to be disposed into four elementary forms, constituting cryptæ or vesicles, follicles, cæca, and tubuli. Membrane, disposed into these elementary forms, constitutes the simple bodies by the accumulation and the varied arrangement of which the compound organs are composed. There is no other known element which enters into the composition of the most complex secreting organ.



Branched cæca, showing—1, the cæca, terminating in, 2, excretory ducts which unite to form, 3, a common trunk.

The basis of the secreting canals consists, then, of membrane disposed in one or other of the elementary forms. These secreting canals constitute a peculiar system of organs wholly different from all the other organs of the body. The form of these organs, their structure, and their relation to the blood-vessels and nerves, have formed subjects of laborious investigation and of keen controversy during several centuries. The honour of discovering the exact truth on these points is due to very recent researches. Malpighi, an Italian, who flourished at

Bologna in the middle of the seventeenth century, was the first to establish a special inquiry into the intimate structure of the secreting apparatus. After many years of laborious examination, he arrived at the conclusion that a minute sac or follicle is invariably interposed between the termination of the capillary artery and the commencement of the excretory duct. According to him, the capillary artery conveys the blood to the follicle, separates from the blood the substance secreted; and the excretory duct arising from one extremity of the follicle conveys the secreted fluid, when duly prepared, to its destined situation. By injection, by dissection, by the microscope, by experiment on living animals, and by the phenomena of disease, he conceived that he had demonstrated that this is the true structure of the secreting apparatus in its most complex form. This view was generally acquiesced in by his contemporaries and by succeeding anatomists and physiologists; and in the time when Ruysh wrote was the received opinion.

Since every secreting organ is copiously supplied with blood, it follows that a great part of the blood of the body is always circulating in secreting organs; and, indeed, it is to afford materials for the action of these organs that the blood itself is formed. How do these organs act upon the blood? All that is known of the course of that portion of the blood which flows through an organ of secretion is, that it passes into arteries of extreme minuteness, which are spread out upon the external walls of the elementary secreting bodies, and which, as far as they can be traced, pass into capillary veins,—nowhere terminating by open mouths.—nowhere presenting visible outlets or pores; their contents probably transuding through their thin and tender coats by the process of endosmose. As it is flowing through these capillary arteries, the blood undergoes the transformations effected by secretion, forming,—1. The fluids, which are added to the aliment, and which accomplish its solution, and change it into chyme. 2. The fluids, which are added to the chyme to convert it into chyle, and both to chyle and lymph, to assist in their assimilation. 3. The fluids which, poured into the cavities, facilitate automatic or voluntary movements. 4. The fluids which serve as the media to the organs of the senses, by which external objects are conveyed to the sentient extremities of the nerves for their excitement. 5. The fluids which, deposited at different points of the cellular tissue, when more aliment is received than is needed, serve as reservoirs of nutriment to be absorbed when more aliment is required than can be afforded by the digestive organs. 6. The fluids which are subsequently to be converted into solids. 7. The fluids which are eliminated from the common mass, whether of fluids or solids, to be carried out of the system as excrementitious substances. 8. In addition to all these substances, which are indispensable to the preservation of the individual, those which are necessary to the perpetuation of the species.

In order to form any conception of the mode in which the secreting organs act upon the blood, so as to elaborate from it such diversified substances, it is necessary to consider the chemical composition of the different products of secretion, and the degrees in which they really differ from each other, and form the common mass of blood out of which they are eliminated. By chemical analysis, it is established that all the substances which are formed from the blood by the process of secretion are either water, albumen, mucus, jelly, fibrin, oil, resin, or salts; and, consequently, that all the secretions are either aqueous, albuminous, mucous, gelatinous, fibrinous, resinous, oleaginous, or saline.

1. Aqueous Secretions.—From the entire surface of the skin, and also from that of the lungs, there is constantly poured a quantity of water, derived from the blood, mixed with some animal matters, which, however, are so minute in quantity, that they do not communicate to the aqueous fluid any specific character.

2. Albuminous Secretions.—All the close cavities, as the thorax, the abdomen, the pericardium, the ventricles of the brain, and even the interstices

of the cellular tissue, are constantly moistened by a fluid which is termed serous, because it is derived from the serum of the blood. This serous fluid consists of albumen in a fluid form, and it differs from the serum of the blood chiefly in containing in equal volumes a smaller proportion of albumen. Membranes of all kinds consist essentially of coagulated albumen: and the albumen, as constituting these tissues, differs from albumen as existing in the serum of the blood only in being unmixed with extraneous matter, and in being in a solid form.

3. Mucous Secretions.—As all the close cavities, or those which are protected from the external air, are moistened with a serous fluid, so all the surfaces which are exposed to the external air, as the mouth, the nostrils, the air-passages, and the whole extent of the alimentary canal, are moistened with a mucous fluid. Mucus does not exist already formed in the blood: it is always the product of a gland. Some of the mucous glands are among the most elaborate of the body; still the main action of the gland seems to be to coagulate the albumen of the blood; for the basis of mucus is coagulated albumen. The fluid that lubricates the mucous surfaces in their whole extent, the saliva, the gastric juice, the tears, the essential part of the fluid formed in the testes and in the ovaria, are mucous secretions. Hence the most complex and elaborate functions of the body, respiration, digestion, reproduction, are intimately connected with the mucous secretions: nevertheless, as far as regards their chemical nature, the mucous differ but slightly from the albuminous secretions; and it is probable that a slight change in the secreting organ is sufficient to convert the one into the other. By the irritation of mercury on the salivary glands, the saliva, properly of a mucous, is sometimes converted into a substance of an albuminous nature; and irritation in some of the serous membranes occasionally causes them to secrete a mucous fluid.

4. Gelatinous Secretions.—The proximate principle termed jelly abounds plentifully in several of the solids of the body, and more especially in the skin; but jelly does not exist already formed in the blood. Yet it is not the product of a gland, neither is there any known organ by which it is formed. Out of the body albumen is capable of being converted in jelly by digestion in dilute nitric acid: this conversion is probably effected by the addition of a portion of oxygen to the albumen. Albumen contains more carbon and less oxygen than jelly; the proportions of hydrogen and nitrogen in both being nearly the same. According to MM. Gay Lussac and Thénard, the elements of albumen and jelly are,

	Carbon.	Oxygen.	Hydrogen.	Nitrogen.
Albumen . .	52.883	23.872	7.54	15.765
Jelly . . .	47.881	27.207	7.914	16.988

The conversion of albumen into jelly is incessantly going on in the system; and the process accomplishes most extended and important uses. In the lungs at the moment of inspiration, oxygen enters into the blood in a state of loose combination; but in the system, at every point where the conversion of albumen into jelly takes place, oxygen probably enters into a state of chemical combination with albumen; and the new proximate principle, jelly, is the result. The agent by which this conversion is effected appears to be the capillary artery; the primary object of the action is the production of a material necessary for the formation of the tissues of which jelly constitutes the basis, as the skin; but a secondary and most important object is the production of animal heat; the carbon that furnishes one material of the fire being given off by the albumen at the moment of its transition into jelly; and the oxygen that furnishes the other material of the fire being afforded to the blood at the moment of inspiration. This view affords a beautiful exposition of the reason why jelly forms so large a constituent of the skin in all animals. The great combustion of oxygen and carbon, the main fire that supports the temperature of the body, is placed where it is most needed, at the external surface.

5. Fibrinous Secretions.—The pure muscular fibre, or the basis of the

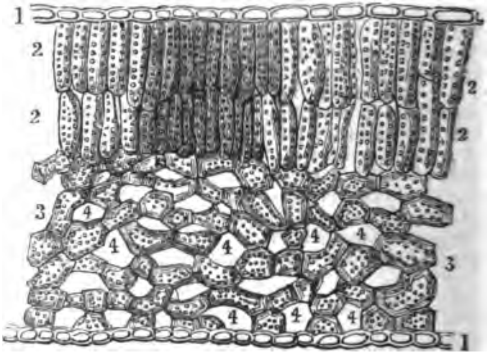
flesh, is identical with the fibrin of the blood. It contains a larger proportion of nitrogen, the peculiar animal principle, and is consequently more highly animalized, than the preceding substances. It appears to be simply discharged from the circulating blood by the capillary arteries, and deposited in its appropriate situation; no material change in its constitution being, it would seem, necessary to fit it for its office.

A third most important agent in the process of secretion is some influence derived from the nervous system.

1. It is proved, by direct experiment, that the destruction of the nervous apparatus, or of any considerable portion of it, stops the process of secretion. By experiments performed by Mr. Brodie, it is ascertained that the secretion of the urine is suspended by the removal or destruction of the brain, though the circulation be maintained in its full vigour by artificial respiration.

2. The section, and still more the removal, of a portion of the sentient nerves of the stomach (the par vagum, or eighth pair), according to some experimentalists, deranges and impedes—according to others, totally arrests—the process of digestion.

The following vertical section of a leaf, from Dr. Smith, shows how the principles of cellular structure and absorbents are carried out in the vegetable creation, on the same principle as in animated beings.

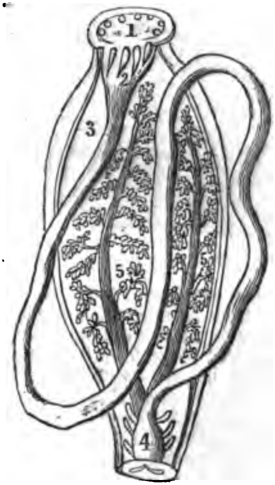


Vertical section of the leaf as it appears when seen highly magnified under the microscope. 1. Cells of the cuticle filled with air. 2. Double series of cylindrical cells occupying the upper surface of the leaf, filled with organic particles. 3. Irregular cells forming a reticulated texture occupying the under surface of the leaf. 4. Interspaces between the cells, termed the intercellular passages or air-chambers.

"Whatever the medium breathed, the organic tissue which constitutes the essential part of the immediate organ of respiration is the skin. The primary tissue of which the skin is composed is the cellular, which, organised into mucous membrane, forms the essential constituent of the skin. In all animals, from the monad to man, *the skin covers both the external and the internal surfaces of the body. When forming the external envelope, this organ commonly retains the name of skin; when forming the internal lining, it is generally called mucous membrane;* and in all animals, either in the form of an external envelope or an internal lining, or by both in conjunction, or by some localization and modification of both, the skin constitutes the immediate organ of respiration. In different classes of animals it is variously arranged, assumes various forms, and is placed in various situations, according to the medium breathed, and the facility of bringing its entire surface into contact with the surrounding element; but in all, the organ and its office are the same: it is the modification only—that modification being invariably and strictly adaptation—which constitutes the whole diversity of the immediate organ of respiration."

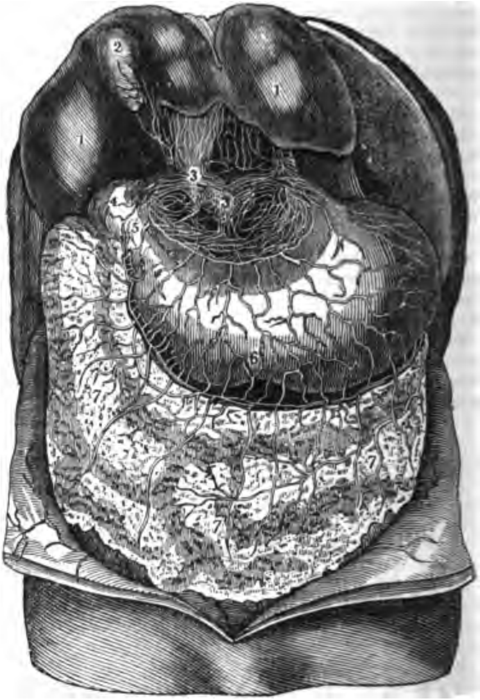
The following observations and cut are from Dr. Smith, showing a specimen of the lowest scale of animated beings:—

"At the commencement of the animal scale, in the countless tribes of the polygastrica, respiration is effected through the delicate membrane which envelops the soft substance of which their body is composed. The air contained in the water in which they live, penetrating the porous external envelope, permeates every part of their body; aërates their nutritive juices; and converts them immediately into the very substance of their body. They are not yet covered with solid shells nor with dense impervious scales, nor with any hard material which would exclude the general respiratory influence of water, or render necessary any special expedient to bring their respiratory surface into contact with the element. But in some tribes even of these simple creatures there is visible by the microscope an afflux of their nutritive juices to the delicate pellicle that envelops them, in the form of a vascular network, in which there appears to be a motion of fluids, probably the nutritive juices flowing in the only position of the body in which they could come into direct contact with the surrounding element. In some more highly advanced tribes, as in wheel-animalcules, there is an obvious circulating system in vessels near the surface of the skin. In other tribes, the internal surface constituting the alimentary canal is of great extent and width, and forms numerous cavities which are often distended with water. In this manner a portion of the internal as well as the external surface is made contributary to the function of respiration, and this extended respiration is conducive to their great and continued activity, to their rapid development, and to the extraordinary fertility of their races.



Holothuria. 1. Mouth. 2. Salivary sacs. 3. Intestine. 4. Cloaca. 5. Ramified tubes, conveying water for respiration into the interior of the body."

GANGLIONIC NERVOUS SYSTEM, OR NERVES OF NUTRITION.—I only give one engraving of this system; they, however, are easily comprehended from the other engravings of nerves, and only differ in appearance by being mostly ganglionic or knotted in groups. They have no common centre, but spread over the entire body wherever nutrition is required, and that of course is in every large or minute part of the frame. Lardner, in his Animal Physics, has some beautiful cuts of this system of nerves, one large cut showing the ganglionic nerves of the whole body. The reader is referred to my notice of this fourth order of nerves at pages 24, 25.



1. Under surface of the liver, turned up, to bring into view the anterior surface of the stomach. 2. Gall-bladder. 3. Organic nerves enveloping the trunks of the blood-vessels. 4. Pyloric extremity of the stomach and commencement of the duodenum. 5. Contracted portion of the pylorus. 6. Situation of the hour-glass contraction of the stomach, here imperfectly represented. 7. Omentum. The electricity or vital power in the nerves, 3 3, cause the chemical change of food in the stomach, and is the first commencement of action in digestion.

VIEW OF THE ORGANIC NERVES OF THE STOMACH.—*Dr. Smith.*

"The organic nerves are spread out in countless numbers upon the great trunks of the arteries, so as to give them a complete envelope; these nerves, never quitting the arteries, accompany them in all their ramifications, and the fibril of the nerve is ultimately lost upon the capillary termination of the artery. It is by these organic nerves that the stomach is enabled to perform its organic functions, which, for the reason assigned, is placed beyond volition, and is without consciousness. By the nerves derived from the sentient system, which mingle with the organic, the function of nutrition is brought into relation with the percipient mind, and is made part of our sentient nature. By the commixture of these two sets of nerves, derived from these two portions of the nervous system, though we have no *direct* consciousness of the digestive process—consciousness ceasing precisely at the point where the agency of volition stops—yet pleasurable sensation results from the due performance of the function. Hence the feeling of buoyancy, exhilaration, and vigour, the pleasurable consciousness to which we give the name of health, when the action of the stomach is sound: hence the depression, listlessness, and debility, the painful consciousness which we call disease, when the action of the stomach is unsound: hence, too, the influence of the mental state over the organic process; the rapidity and perfection with which the stomach works when the mind is happy—when the repast is but the occasion and accompaniment of the feast of reason and the flow of soul, the slowness and imperfection with which the stomach works when the mind is harassed with care, struggling against adverse events, or is in sorrow and without hope, when the friend that sat by our side, and with whom we were wont to take sweet counsel, is gone, and therefore gone that which made it life to live.

"Renovation is the primary and essential office of the stomach, and its organic nerves enable it to supply the ever-recurring wants of the system. Gratification of appetite is a secondary and subordinate office of the stomach, and its sentient nerves enable it to produce the state of pleasurable consciousness when its organic function is duly performed. By the double office thus assigned it, the stomach is rendered what Mr. Hunter named it, the centre of sympathies."—*Dr. Smith.*

"THE MUSCLES OF THE BODY are the agents by which its different efforts and movements are performed. In ordinary language they are known by the name of flesh. Flesh is muscle. A muscle is a compound structure, made up of cellular tissue for its basis, which encloses it in its areole fibrine as the essential constituent. Tendinous fibres are superadded in most muscles, particularly at their extremities, forming the means of attachment to the perisotum and the bones. When we look at a muscle dissected, it evidently appears made up of fibres arranged in a defined direction; several of these are observed to be aggregated into bundles, each of which is detached from the rest by a thin lamilla of delicate cellular tissue. Each bundle again admits of being separated into fibre, and these into fabrilla; and the separation may be continued until we at length arrive at some so minute as to be incapable of further division. The muscles thus formed of bundles or groups of fibres, either singly or in various combinations, draw upon the different parts of the skeleton to which they are attached, and put them in motion or steady and fix them as circumstances require. The skeleton of man contains more than two hundred separate pieces, and the muscles about two hundred and twenty pairs."—*Quain and Wilson.*

MUSCLES. (*Lardner.*)—The apparatus by which the bones are held together being described, it remains to show how those movements of which they are severally susceptible are imparted to them. The bones themselves are merely passive instruments: and the ligaments by which they are connected, the forms given to them at the joints, the cartilaginous coatings, and synovial apparatus, are provided respectively for facilitating, but not at all for originating, their motions. The apparatus by which the motions are immediately produced are fibrous bands and masses of flesh called *muscles*, which constitute that part of the animal body which when used for human food is called *meat.* With the visible fibrous structure of the muscular tissue every one must be familiar. *Muscles* consist of fibres ranged generally side by side, parallel to each other. They are extended between the bones, to one or both of which they are intended to impart motion; or, as in the face and eye, one end only is attached to bone. The muscle itself, however, is not immediately connected with the bone. At its extremities it gradually takes the form of tendinous fibres, totally different in their physical character from the fibres of the muscle itself.

"TENDONS.—These tendinous fibres are sometimes collected into a single cord called a *tendon*, which is inserted in the bone so firmly that before it can be detached from it the bone itself would be broken."—*Lardner.*

MUSCULAR FORCE.—Anatomists and physiologists have not determined with certainty the mechanical change by which muscular contraction is produced. When the muscular tissue is submitted to a microscope of moderate magnifying power, one, for example, of five or six times the linear dimensions, each fibre is found to consist of a number of fasciculi, each similar to the original fibre.

The contractile power of the muscles which have been described can, in general, only be called into action by the dictate of the will. Hence they are called *voluntary muscles*, and examples of them are presented by the muscles which impart motion to the principal members of the body. Thus, the muscles by which the legs or arms are moved can only be brought into play by the operation of the will. There are some muscles which are, to a certain extent, subject to the will, but also act independently of it. The muscles which move the chest in respiration present examples of this class. The will has the power of accelerating, retarding, or even of temporarily suspending the act of respiration; but when the will exercises no influence on the organs of respiration, as when the mind is engaged in other objects, or in sleep, the process of respiration goes on with perfect regularity.

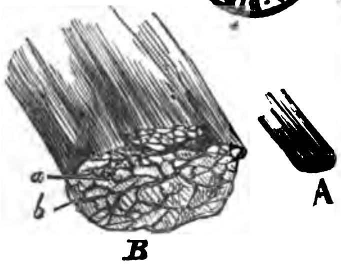


Fig. 1.

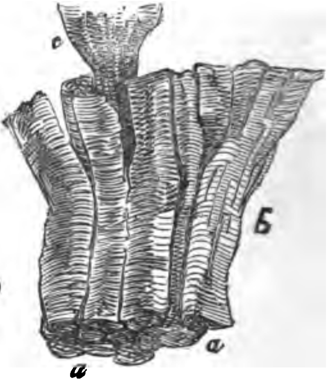
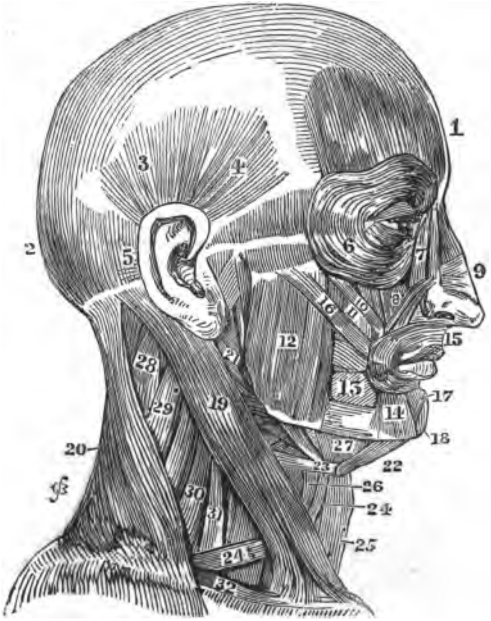


Fig. 2.

In Fig. 1, A represents a small portion of a muscle in its natural size, cut transversely at its extremity. B represents the same object magnified five times in its linear dimensions, the component fibres of which it consists being rendered apparent. Fig. 2 represents a part of a muscle submitted to a much higher magnifying power, in which the structure of each separate fibre is shown as marked by a series of transverse striæ. The terminal section is shown at *a a*, the transverse striæ at *b b*, and a single fibre split into its component fibrillæ at *c*.

INVOLUNTARY MUSCLES.—There are some muscles over which the will has no control whatever, and which are hence called *involuntary muscles*. The heart, and the muscles entering into the structure of the stomach and intestines, are examples of this class. Except the heart, they do not present striæ. The involuntary muscles, and those of a mixed character, like the voluntary muscles, absorb a certain amount of animal energy by their contraction, and consequently such contraction could not be maintained continuously without exhausting the animal power. We find, accordingly, that nature has so regulated the organization, that all muscular action which is independent of the will is intermitting, so that the intervals of muscular repose or relaxation are, on the whole, equal to those of muscular tension. The heart of an animal beats incessantly, sleeping or waking, during the continuance of its vitality; and this action may continue in man even for a century. The muscles, however, which produce it are never in a state of tension for more than a moment, so that they are enabled to recover their energy in the alternate intervals of their relaxation.



MUSCLES OF THE FACE.—*Lardner*.

The various bands or muscles are here well delineated; notice the muscle round the lips to move the lips at pleasure. These muscles, it must be borne in mind, are acted upon by the will from the nervous centres in the base of the brain, through the telegraph wires, or nerves of motion and sensation in the spinal column.

A stratum consisting of five or six muscles (1, 2, 3, 4, 5), of considerable surface, but little thickness, covers the entire surface of the head from the brows to the back of the neck, called by anatomists, according to their local position, *occipital*, *frontal*, and *auricular*, the action of which is to move the scalp, with the hair, the ears, the integuments of the forehead and temples, and the brows. By their contraction, the eyebrows are drawn upwards, the skin of the forehead thrown into transverse folds and wrinkles, the scalp and hair moved backwards and forwards, and the features thereby made to express various and often opposite emotions, according to the greater or less extent to which the action of these muscles is called into play. Joy, surprise, astonishment, or ecstacy, are attended with, or expressed by, a certain elevation of the brows. The contractions and wrinkling of the forehead, and the approach of the brows to each other, involve the more violent class of emotions, such as anger, hatred, indignation, and menace.

The eyes and eyelids, with their appendages, are moved by not less than twelve pair of muscles, of which, however, one only, called the orbicular (6), is superficially visible. These govern the entire play of the eyeball and the eyelids, the flow and suppression of tears, and, in part, the gestures of the brow. They combine, therefore, with the muscles above mentioned, in the expression of anger and menace, and also assume the gestures which express the very different and opposite sentiments of tenderness, love, grief, mental pleasure, and anguish.

The nose and nostrils are moved by six pair of muscles, three only of which (7, 8, 9) are superficially apparent; and fifteen pairs are appropriated to the various motions of the lips, the chin, the cheeks, and the lower jaw.

"It will be observed, that one of the most voluminous muscles, called the *masseters* (12), is appropriated—aided by another, not apparent superficially—to the motion of the lower jaw; that motion being subject, in the act of mastication, to a greater amount of resistance than any other facial gesture.

"The motions of the neck, and consequently of the head, are subject to the action of about forty pairs of muscles, of which a small number only are superficially visible. And some of those which appear in the figure do not belong exclusively to the neck, but are shared between it and the trunk.

"Eight pair of muscles are more or less called into play to make the head incline forwards, among which is the long muscle (19), extending from the ear to the point where the clavicle (32) is articulated with the sternum, or breast-bone; another, called the mylo-hyoidean, extending downwards from the jaw; and another, the digastric (21, 22), extending from the inner extremity of the jaw on one side, and its outer extremity on the other, to the hyoid bone (23).

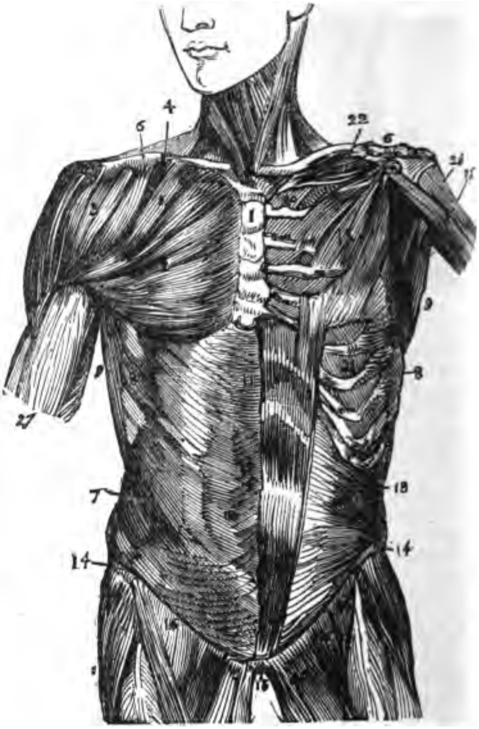


Fig. 56.

The anterior muscles shown in Fig. 56, though located upon the trunk, act, for the most part, in moving the arms and shoulders. The superficial ones on the left side of Fig. 56 are few in number, and great in extent. The great pectoral muscle (56, ^{1}, ^{3}) has its origin along the edge of the breast-bone (56, ^{1}), and along something less than half the length of the clavicle (56, ^{6}) and from these lines the fibres converge to a point a little below the head of the humerus, and on the inside part of that bone. The clavicular fibres of this muscle, therefore, draw the arm obliquely upwards and inwards, having a tendency to secure the head of the bone in its socket; while the sternal fibres, being nearly horizontal. draw it inwards towards the side. The lesser pectoral muscle. which is covered by the greater, is shown at 56, ^{13} It is attached at its origin to three of the ribs.—the third, fourth, and fifth, and at its insertion to a process (the coracoid) of the scapula.

The dentelated insertion of the great serrated muscle, already described, attached to the ribs, is shown at 56, ^{8}. The front part of the deltoid, already mentioned, is also shown at 56, ^{5}.

"Seven pair of muscles are employed, together or separately, in inclining the head backwards, among which there appear in the figure the trapezius (20) and the splenius (28). Seven pair are engaged in inclining the head sidewards, several of which are also those—such as 19 and 20—which incline the head backwards."

(*Lardner.*)—The principal anterior muscles of the trunk and shoulders are shown in Fig. 56, those on the left being superficial, and those on the right the deeper layer covered by the former. In proportion to the surface over which they are spread, these muscles are much less numerous than those of the back, a circumstance which naturally arises from the fact already indicated, that the weight of the trunk, being chiefly in front of the spine, is altogether supported and, for the most part, moved by the posterior muscles.

In Fig. 54 the superficial muscles of the back, including the neck, shoulder, and haunch, are shown on the left side of the spine; and those of the second layer, disclosed by the removal of the former, on the right side.

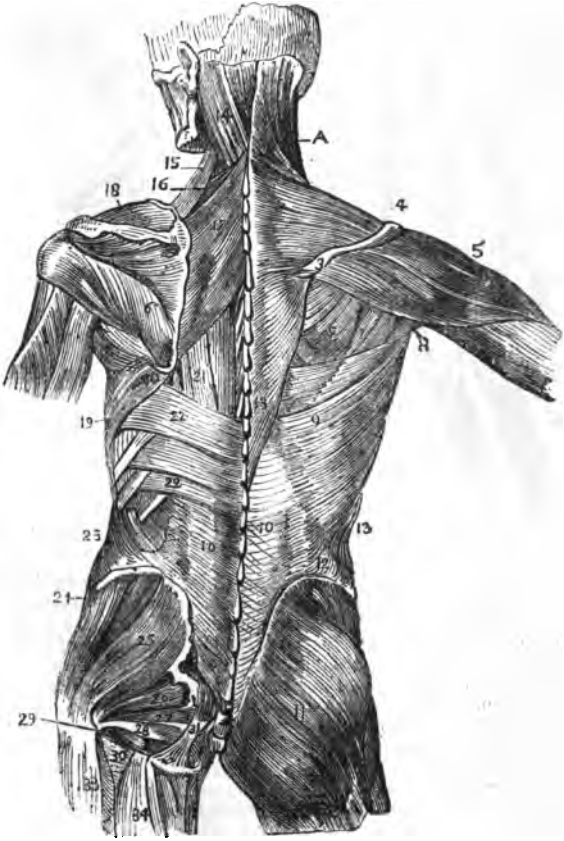
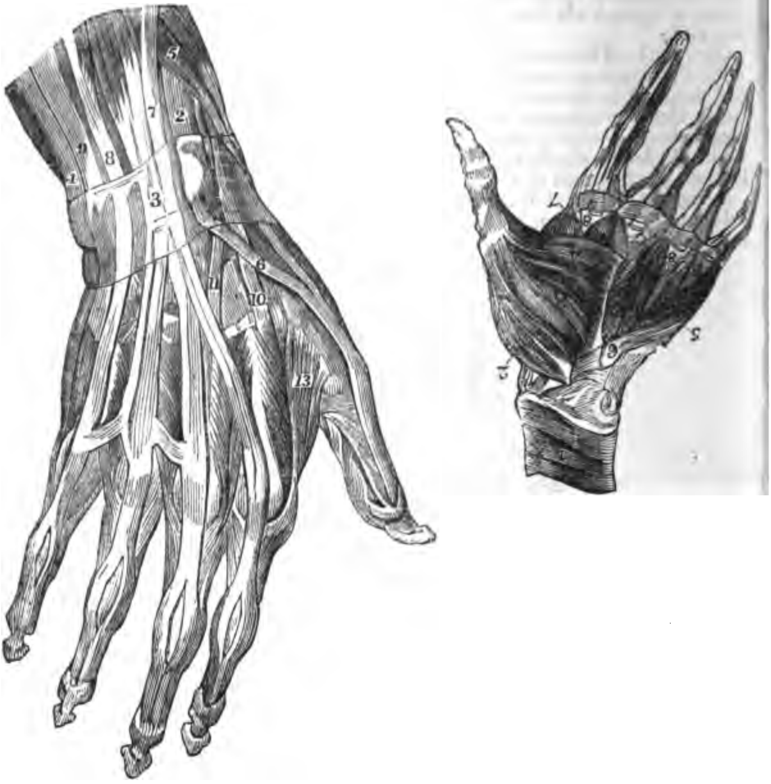
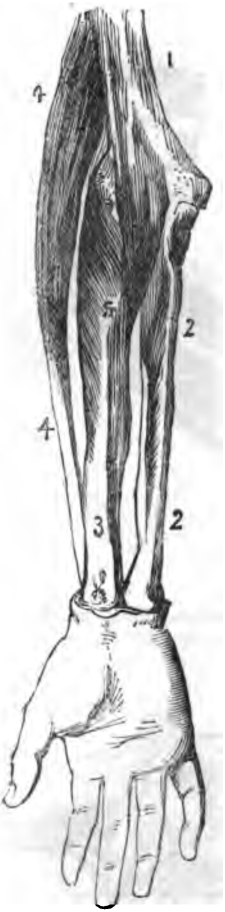


Fig. 54. - *Lardner.*



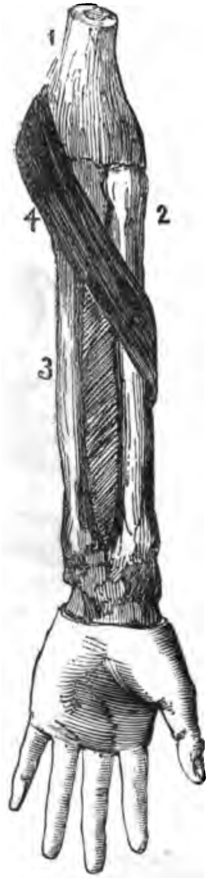
MUSCLES OF THE HAND, STRIPT OF THE SKIN.—*Quain and Wilson.*

"The bracelet called the annular ligament, which retains the tendons upon the wrist, is only a part of a more extensive system of membranous binding, enveloping generally the muscles and their tendons. Wherever a considerable change of direction takes place in the latter, as in the instance of the elbow and wrist, this membrane sometimes assumes the form of a strap or band. The tendons of the brachial muscles, after passing within the annular ligament of the wrist, pass along the hand, and most of them along the fingers. They are confined on the hand by a membrane such as that just described, and on the fingers by ligaments, which retain them in their position in the same manner as that in which the annular ligament of the wrist acts. Thus we may conceive the tendons and muscles of the hand and fingers retained in their position by being enclosed in a membranous and ligamentous glove; and, in the same manner, those of the arm and humerus, by a membranous sleeve extending upwards from the superior edge of the annular ligament of the wrist."—*Lardner.*



MUSCLES OF THE ARM.—*Lardner*.

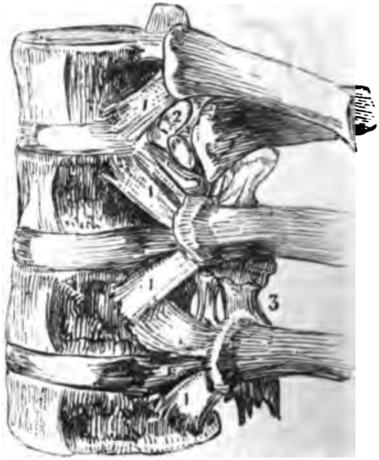
View of the supinators of the radius and hand. 1. The humerus. 2. The ulna. 3. The radius. 4. The muscle called the long supinator, passing to be inserted into the lower portion of the radius. 5. The muscle called the short supinator, surrounding the upper part of the radius.



VIEW OF THE PRONATORS OF THE HAND.

1. Lower end of the humerus. 2. The radius. 3. The ulna. 4. The muscle called the round *pronator*, one of the powerful pronators of the hand.

A view of the muscles called intercostals, filling up the spaces between the ribs.—*Dr. Smith.*



Ligaments connecting the ribs to the spinal column. 1, anterior ligaments; 2, inter-articular ligament; 3, ligaments of the necks of the ribs. —*Dr. Smith.*

(*Dr. Lardner.*) The muscles which surround the thigh bone, between the hip and the knee, are shown in Figs. 70 and 71; the former presenting a posterior and the latter an anterior view of the left thigh.

Of these muscles, 70^1, 70^2, 71^1, 71^2, 71^3, 71^{11}, 71^{12}, and 71^{13} originate in the pelvis, have their insertions in the thigh-bone, and are therefore motor muscles of the thigh. All the others, passing below the knee, are inserted in one or other of the bones of the leg, of which accordingly they are either flexors or extensors, according as they are inserted in the posterior or anterior part.

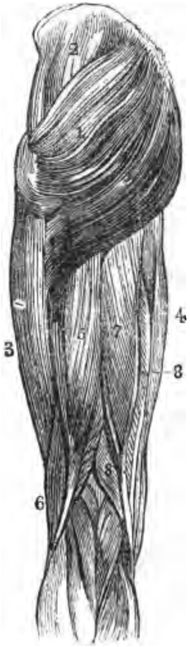


Fig. 70.

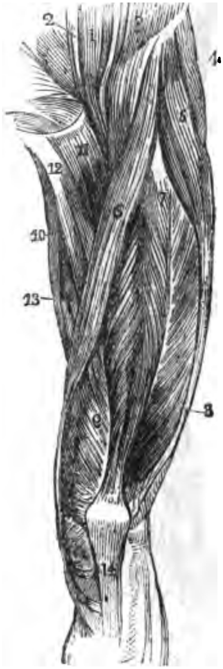


Fig. 71.

The muscles which surround the bones of the leg, like those which invest the fore-arm, throw out low tendons, which, passing down the instep and to the heel, are inserted in the bones of the foot and toes in the same manner as those of the fore-arm are inserted in the bones of the hand and fingers. And in the same manner as the bellies of the muscles of the arm form the fleshy mass at its upper part, tapering into mere tendons at the wrist, the bellies of the muscles of the leg form the fleshy part of the calf, tapering as they descend into tendons which surround the instep and heel.

The patella, or knee-pan, is a light but strong bone, of the figure of the heart;

as painted on playing cards, placed at the fore part of the joint of the knee, and attached by a strong ligament to the tibia, the motions of which it follows. It is lodged, when the knee is extended, in a cavity formed for it in the femur; when bent, in a cavity formed for it at the fore part of the knee.

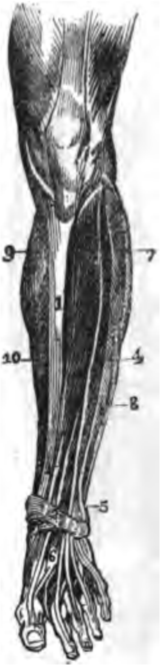


Fig. 72.

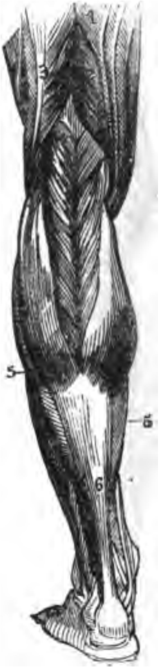
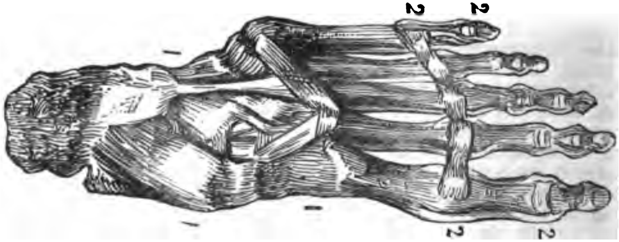
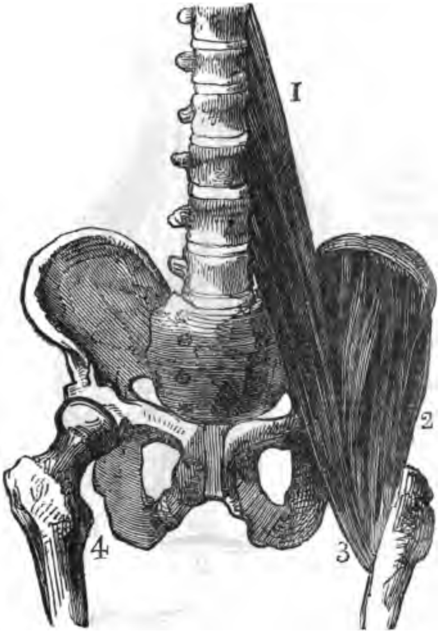


Fig. 73.

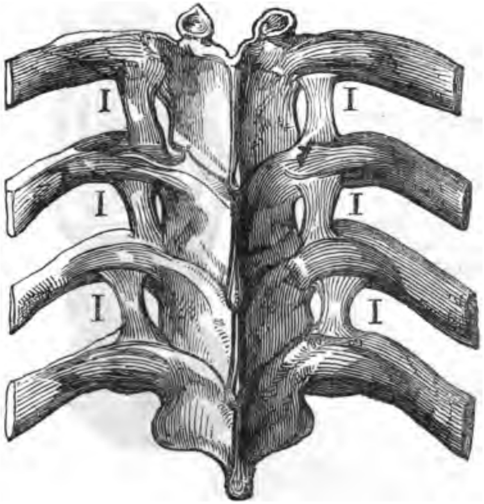
A front view of the superficial muscles of the left leg is given in Fig. 72, and a back view in Fig. 73.



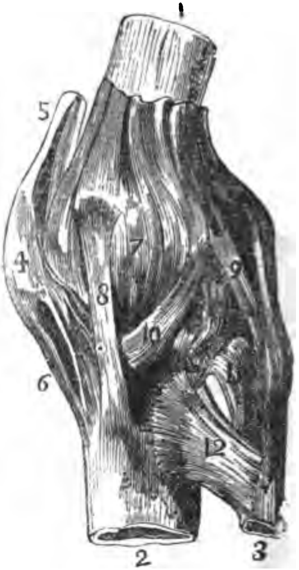
General view of the ligaments of the sole of the foot, 1, ligaments connecting the bones of the tarsus; 2, ligaments connecting the bones of the toes.



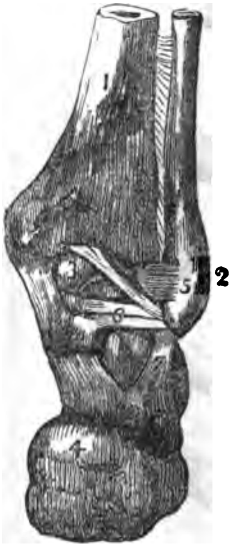
View of the muscles that bend the thigh. 1, the muscle called psoas; 2, the muscle called iliacus; 3, tendons of these muscles, going to be inserted into the trochanter minor of the femur.—*Dr. Smith.*



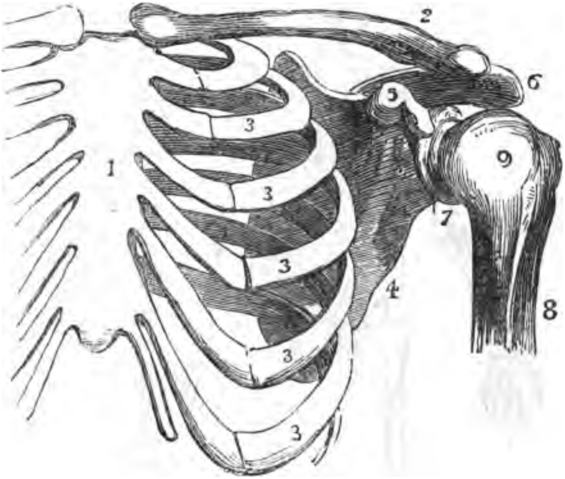
1, &c., Ligaments connecting the ribs to the vertebræ behind the spine.—*Dr Smith.*



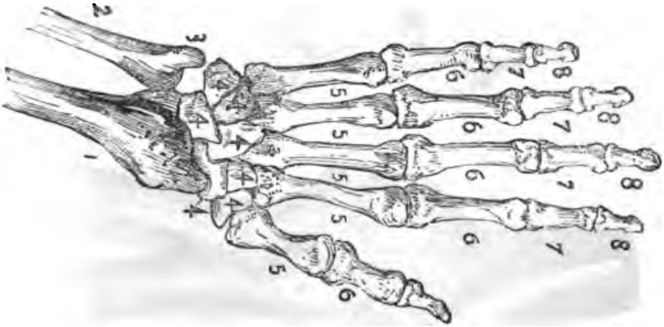
General view of the ligaments of the knee-joint. 1, lower end of the femur; 2, upper end of the tibia; 3, upper end of the fibula; 4, the patella; 5, united tendons of the extensor muscles; 6, ligaments of the patella; 7, the capular investment of the knee; 8, the internal lateral ligament; 9, the external lateral ligaments; 10, the posterior ligament; 11, the ligament connecting the tibia and fibula; 12, a portion of the inter-osseous ligament.



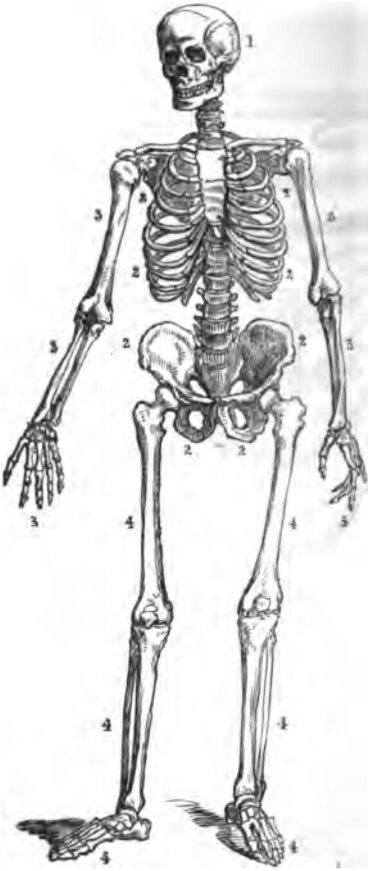
General view of the posterior ligaments of the ankle-joint. 1, Lower end of the tibia; 2, lower end of the fibula; 3, astragalus; 4, os calcis; 5, ligament between the tibia and fibula; 6, ligament passing from the fibula to the astragalus; 7, ligament passing from the fibula to the os calcis; 8, ligament passing from the tibia to the astragalus



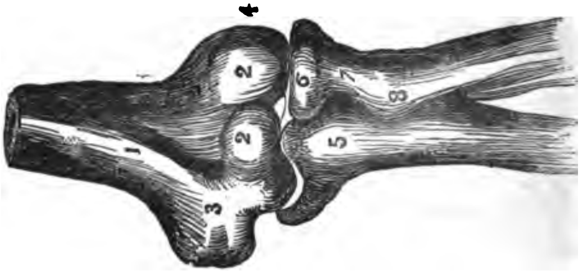
1, Sternum; 2, clavicle; 3, ribs; 4, anterior surface of scapula; 5, coracoid process of scapula; 6, acromion process of scapula; 7, margin of glenoid cavity of scapula; 8, body of the humerus or bone of the arm; 9, head of the humerus.—*Dr. Smith.*



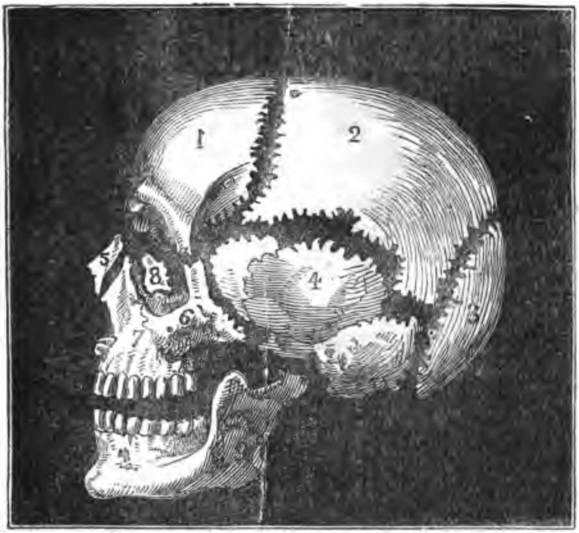
BONES OF THE HAND.—*Dr. Smith.*



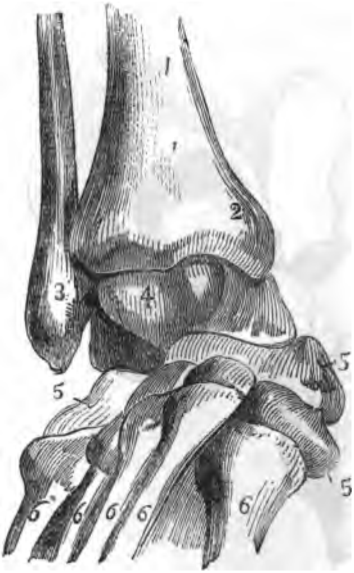
Front view of the skeleton. 1, the head; 2, the trunk; 3, the superior extremities; 4, the inferior extremities.



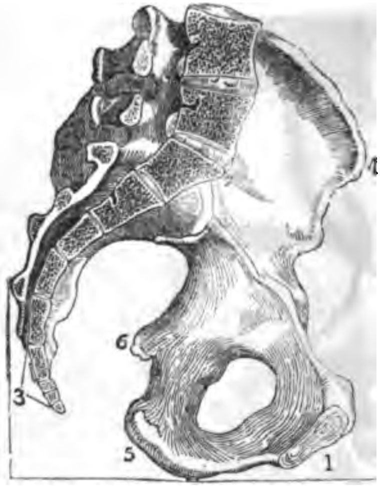
BONES OF THE ELBOW JOINTS AND ARM, FROM DR. SMITH.



Bones of the skull separated; side view. 1, Frontal bone; 2, parietal bone; 3, occipital bone; 4, temporal bone; 5, nasal bone; 6, malar bone; 7, superior maxilary bone; 8, the unguis; 9, the inferior maxilary bone.



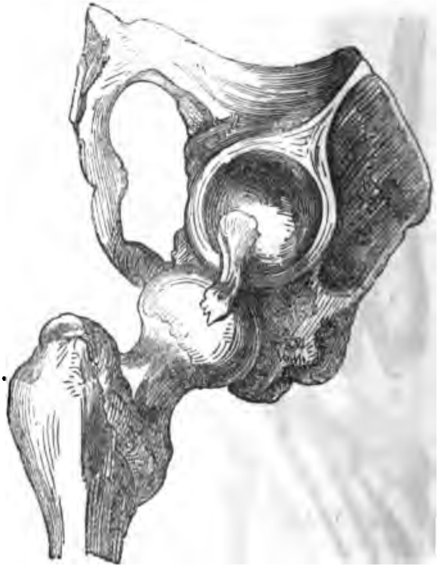
Anterior view of the bones forming the ankle-joint. 1, lower end of the tibia; 2, production of the tibia, forming the inner ankle; 3, lower end of the fibula, forming the outer ankle; 4, upper part of the astragalus: these three bones form the ankle-joint; 5, 5, 5, other bones of the tarsus; 6, 6, 6, 6, 6, metatarsal bones.—*Dr. Smith.*

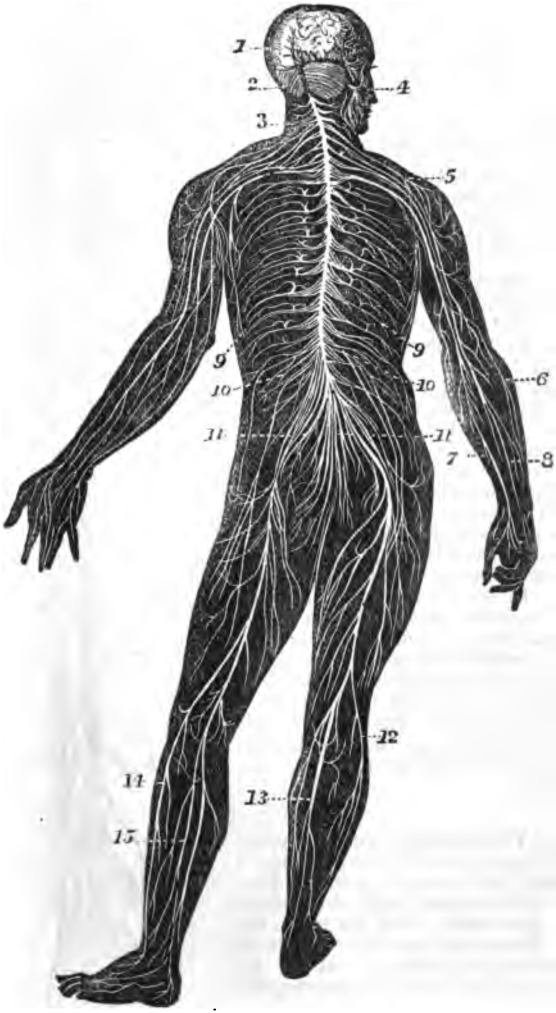


No. 3, termination of the spine; 1, 2, 4, 6, bones connected with the hip. (*Lardner.*)

THE HIP-JOINT.

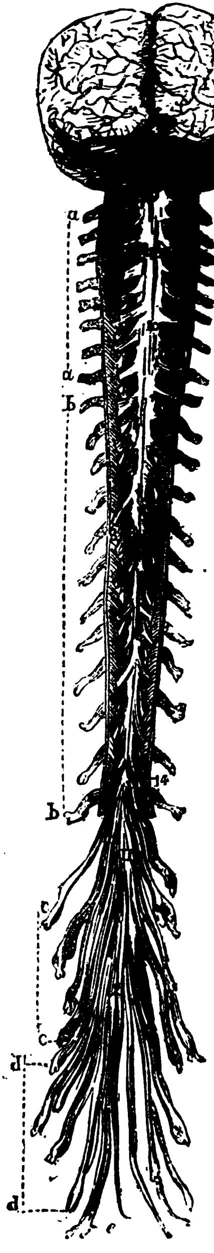
A view of the head of the femur drawn out of its socket, and suspended by the round ligament, to show more clearly the action of the ligament in retaining the head of the femur in its socket. Rheumatism sometimes attacks this ligament and the connecting muscles, and forces the head of the thigh-bone out of the socket.





1, cerebrum; 2, cerebellum; 3, spinal cord; 4, facial nerve; 5, brachial nerves; 6, median nerve; 7, ulnar nerve; 8, internal cutaneous nerve; 9, intercostal nerves; 10, lumbar nerves; 11, sciatic plexus; 12, external peroneal; 13, tibial nerves; 14, external peroneal nerve; 15, external saphena.

A theoretical illustration of the general form and disposition of the cerebro-spinal system of nerves.—*Lardner*.



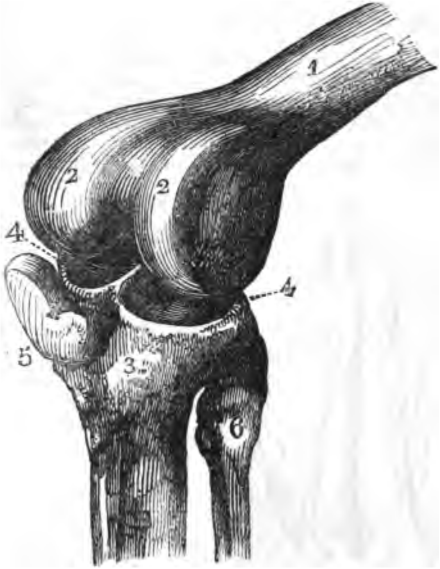
BRAIN AND SPINAL MARROW.

The dura mater removed from the brain, and spread open along the spinal cord, so as to display the pia mater, covered by the thin and transparent arachnoid membrane.—*Quain and Wilson.*

Nos. 1, 1, the convolutions of the two hemispheres of the cerebrum covered by their vascular membrane, the pia mater; 2, the median fissure between the hemispheres, which receives the falx major; 3, 3, the lateral lobes of the cerebellum, also invested with pia mater; 4, the superior vermiform process of the cerebellum; 5, 5, the fissure separating the posterior lobes of the cerebrum from the cerebellum, which lodges the tentorium cerebelli; 6, the depression between the two lobes of the cerebellum, lodging the falx minor; 7, 7, the dura mater of the spinal cord laid open: it is entirely removed below; 8, 8, the membrana dentata, or ligamentum denticulatum, connecting the sides of the spinal cord to the inner surface of the dura mater; 9, the superior swelling of the spinal cord; 10, the middle or brachial swelling; 11, the inferior or lumbar swelling; 12, the cauda equina; 13, the posterior longitudinal fissure; 14, 14, the posterior roots of the spinal nerves.

a, a, the eight cervical nerves; *b, b,* the twelve dorsal nerves; *c, c,* the five lumbar nerves; *d, d,* the five sacral nerves; *e,* the two coccygeal nerves.

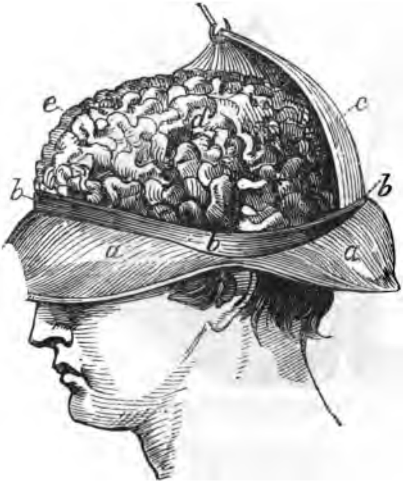
ARACHNOID.—The arachnoid (cobweb) membrane, so called from its resemblance to a spider's web in its texture, is the second coating. Part of it is in immediate contact with, and inseparable from, the dura mater, which has so far the character of a fibro-serous membrane. A space intervenes between the arachnoid and the pia meter, filled with a liquid called the *cerebro-spinal fluid.*—*Lardner.*



BONES OF THE KNEE-JOINT.

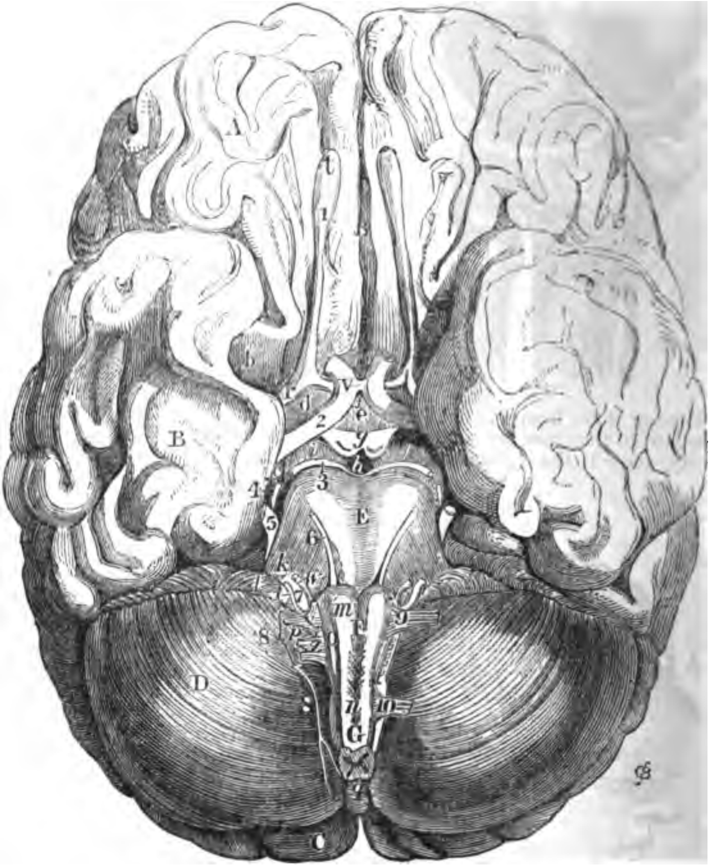
No. 5, the patella or knee-cap; No. 6, the upper end of the fibula or small bone of the leg; No. 1, thigh bone; 3, leg bone.—*From Dr. Smith.*

Tracing them from without inwards we see, then, that the various coverings afforded to the brain, the central organ of the animal life, seated in its vaulted cavity, are—1, The tegument, consisting of the skin and of cellular and adipose membrane. 2, Beneath the tegument, muscles, in the forepart and at the vertex, comparatively slender and delicate; at the sides and posteriorly, thick, strong and powerful. 3, Beneath the muscles, a thin but dense membrane, termed the



a, the scalp, turned down; *b*, the cut edge of the bones of the skull; *c*, the external strong membrane of the brain (dura mater) suspended by a hook; *d*, the left hemisphere of the brain, showing its convolutions; *e*, the superior edge of the right hemisphere; *f*, the fissure between the two hemispheres.

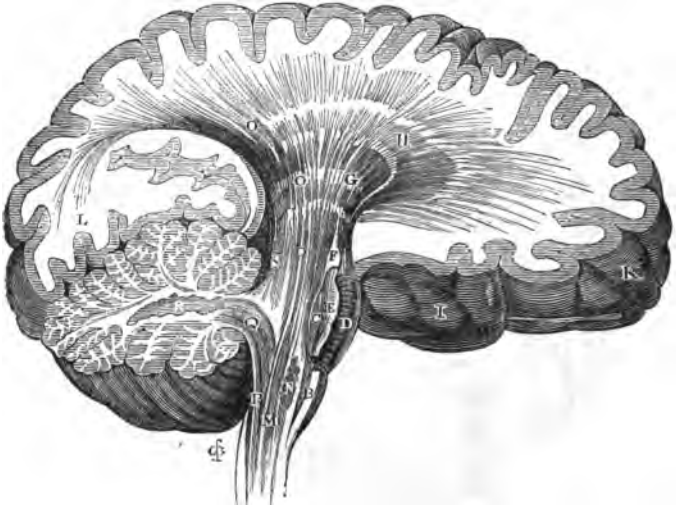
pericranium, lining the external surface of the cranial bones. 4, Beneath the pericranium, the bony substance of the cranium, consisting of two firm and hard bony plates with a spongy, bony structure, called diploë, interposed between them. 5, Immediately in contact with the inner surface of the bony substance of the cranium, and forming its internal lining, the dense and strong membrane, called the *dura mater*, not only affording a general covering to the brain, but sending firm partitions between individual portions of it. 6, A serous membrane lining the internal surface of the dura mater, and reflected over the entire surface of



This cut is from Quain and Wilson's beautifully-coloured drawing in their Nerves of the Human Body.

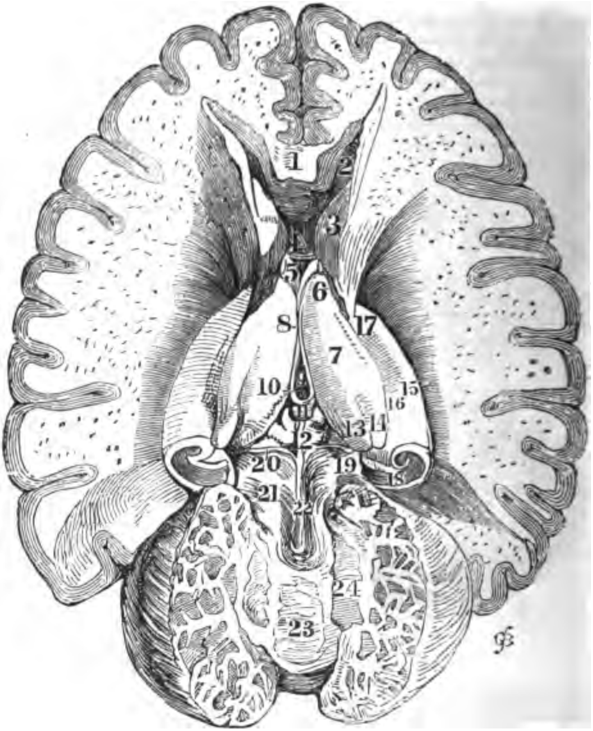
"The base of the brain, displaying the origins of the cerebral nerves. No. 1, the first cerebral nerve, the olfactory, to the nose; No. 2, the second optic nerve to the eye; No. 3, nerve of motion to the eye; X, nerve to the ear; G, junction with spinal column, the medulla oblongata; D, the cerebellum; E, pons Varolii.

the brain, termed the arachnoid tunic. 7, A thin and delicate membrane in immediate contact with the substance of the brain, descending between all its convolutions, lining all its cavities, and enveloping all its fibres, called the pia mater. 8, An aqueous fluid, contained between the arachnoid membrane and the pia mater. Skin, muscle, pericranium, bone, dura mater, arachnoid membrane, pia mater, and aqueous fluid, superimposed one upon another, form, then, the covering and defence of the brain; so great is the care taken to protect this soft and tender substance.—*Dr. Smith.*



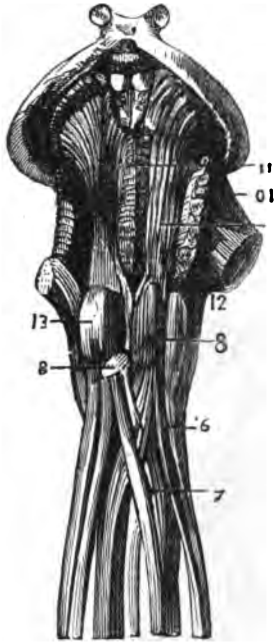
"In this drawing the development of the brain from the primitive fasciculi of the medulla oblongata, and the formation of the diverging fibres, described by Gall and Spurzheim, are exhibited. A section has been made through the outer third of the medulla oblongata and cerebellum; the crus cerebelli has been divided, and the outer convolutions of the right hemisphere carefully raised in the direction of the fibres."—*Quain and Wilson.*

A. The medulla oblongata. B. The corpus pyramidale. C. The fibres of the corpus pyramidale expanding in the grey substance of the pons Varolii. D. The pons Varolii. E. The divided edge of the transverse or converging fibres of the pons Varolii. F. The passage of the fibres of the corpus pyramidale through the crus cerebri. G. The course of the fibres through the thalamus opticus, the inferior cerebral ganglion of Gall. H. The corpus striatum (superior cerebral ganglion, Gall), from which the fibres diverge to the convolutions of the middle and anterior lobes. I. The lower part of the middle lobe of the cerebrum. K. The anterior lobe. L. The posterior lobe. M. The corpus olivare. N. The ganglion of the corpus olivare. O, O. The course of the fibres of the corpus olivare through the pons Varolii, crus cerebri, thalamus opticus and corpus striatum, to expand into the upper convolutions of the hemisphere and posterior lobe. P. The corpus restiforme. Q. The fibres of the corpus restiforme entering the substance of the cerebellum. R. The corpus dentatum (vel rhomboideum), or ganglion of the cerebellum. S. The processus è cerebello ad testes, or fibres of communication between the cerebellum and cerebrum



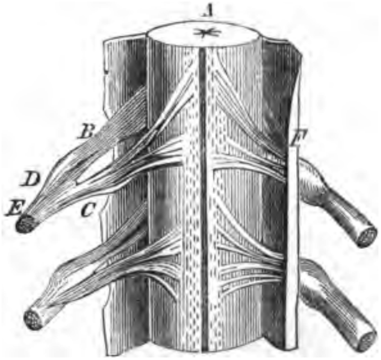
Section of the base of the brain, showing the NERVOUS CENTRES from and upon which the mind makes impressions to communicate sensation and motion to every part of the body through its telegraphic system, the nerves, which here all concentrate. B is the forepart of the brain, top of the forehead; A is the cerebellum at the back of the head, cut open to show other parts. A great deal has been written on the pituary gland, No. 11, as the one central point where the mind acts from.—*See page* 13 *of this Work.*

1. The anterior extremity of the corpus callosum; 2, the anterior corner of the lateral ventricles; 3, part of the corpus striatum; 4, the anterior commissure of the third ventricle; 5, the crura of the fornix; 7, the thalamus opticus; 8, the fissure between the thalami optici, which is called the third ventricle; 9, the foramen commune posterius; 11, the pineal gland; 12, the corpora quadrigemina; 13, the corpus geniculatum internum of the thalamus opticus; 14, part of the corpus geniculatum externum; 15, the hippocampus major; 16, the corpus fimbriatum; 17, the pes hippocampi; 18, the cut surface of the hippocampus major, showing the convoluted arrangement of the grey and white substance of which it consists; 19, 20, the upper surface of the crus cerebri; 21, the processus è cerebello ad testes; 22, the valve of Vienssens; the middle portion of the cerebellum connecting the two lateral lobes.—*in and Wilson.*



VIEW OF THE CONSTITUENT CORDS OF THE SPINAL MARROW, SEPARATED, AND UNITING IN THE PYRAMIDS OF THE BRAIN.—*Lardner.*

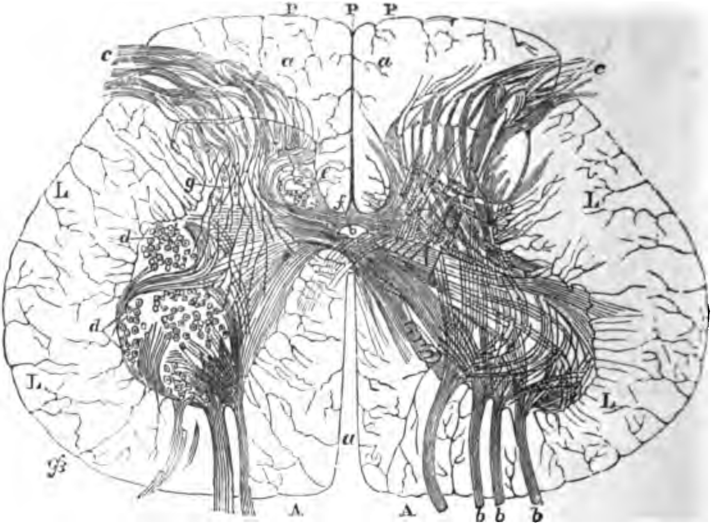
6. Anterior cord dividing itself into two, of which the innermost contributes to the formation of the corresponding pyramid; 7, middle or lateral cord, divided into four, which pass from the left to the right side, intersecting an equal number of similar ones coming from the opposite side, and taking the inverse direction; 8, the pyramids, of which the right is cut off immediately above the intersection, to show the olivary body (13) behind it.



A, Spinal marrow; B, root of spinal nerve from back portion; C, root from front portion; D, ganglion on the posterior part; E, the two parts united in one cord; F, the outer coating of spinal marrow.

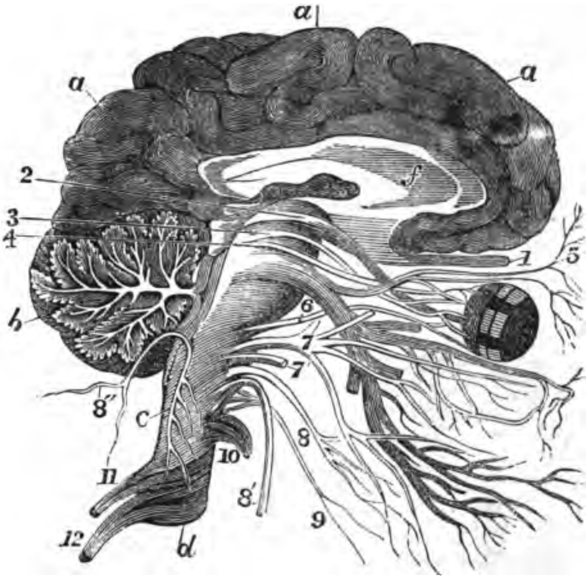
A section of the spinal marrow, showing the connexion between it and the spinal nerves by double roots, the nerves of motion and sensation.

According to Sir Charles Bell, Magendie, and others, a part of the filaments which compose each spinal nerve rise from [or terminate in] the back portion, and a part from the front portion of the spinal marrow (See Eng.). Those which rise from the back portion, *b*, almost immediately run into a ganglion *d*, and proceeding from this, they unite with those that come from the front portion *c*, and form the cord *e*, which goes out to be dispersed over the body. But in entering into the formation of the cord, the filaments retain their filamentary form and original character, and are again ultimately separated. The filaments which rise from [or terminate in] the back portion of the spinal marrow are the nerves of animal sensation. Some few of those are distributed to the muscles of voluntary motion, and endow those organs with a small degree of animal sensibility, by which the mind is informed of the action of the muscles in obedience to the will, and enabled to regulate the extent of the action. The rest of the posterior filaments proceed to the outer skin of the body, and by endowing it with a high degree of animal sensibility, constitute it a general organ of touch, which is the fundamental animal faculty of external relation. They however abound more in some parts than in others. In man, the ends of the fingers are pre-eminently qualified for this function.—*Graham.*



Transverse section of Human Spinal Cord, through the middle of the lumbar enlargement, showing on the right side the course of the nerve-roots, and on the left the position of the principal tracts of vesicular matter :—A, A, anterior columns ; P, P, posterior columns ; L, L, lateral columns ; *a*, anterior median fissure ; *p*, posterior median fissure ; *b*, *b*, *b*, *b*, anterior roots of spinal nerves ; *c*, *c*, posterior roots ; *d*, *d*, tracts of vesicular matter in anterior column ; *e*, tracts of vesicular matter in posterior column ; *f*, spinal column ; *g*, substantia gelatinosa.

With the spinal cord (in its limited sense) there are connected thirty-one pairs of nerves ; each of which corresponds to a vertebral segment of the body, and has two sets of roots, an anterior and a posterior, differing in their functional endowments. These divisions, of which the anterior is by far the larger, proceed to the anterior and posterior parts of the body respectively ; and are chiefly distributed to the skin and the muscles. The anterior branch is that which communicates with the sympathetic nerve.—In addition to these, however, the cranial prolongation of the spinal axis is the centre of all the cephalic nerves, save those of special sensation, which terminate in their respective ganglia. These cephalic nerves are for the most part distinguished by the peculiarity of their endowments.—*Carpenter.*



SIDE VIEW OF THE HUMAN BRAIN, SHOWING THE NERVES.

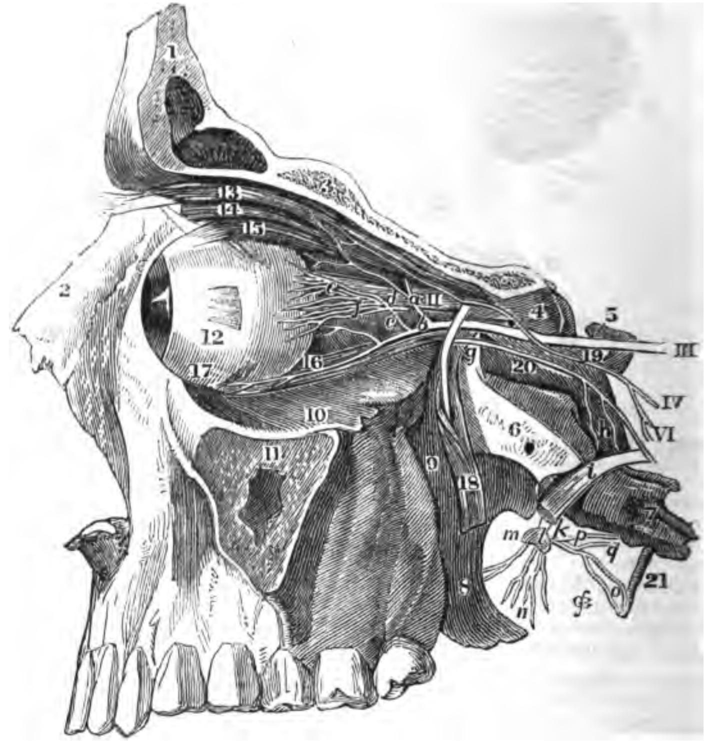
SPINAL CEREBRAL SYSTEM.—The three high order of nerves, through and by which the mind acts and governs the body.—(See p. 11 of this work.)

Longitudinal section of the cerebrum (*in the upper part of the head*), cerebellum (*back of the head*), and medulla oblongata. *a, a, a,* the cerebrum; *b,* the cerebellum; *c,* the medulla oblongata; *d,* the spinal marrow; *f,* the lateral ventricle. 1, the olfactory nerve; 2, the optic nerve; 3, 4, 5, 6, the third, fourth, fifth, and sixth nerves; 7, the portio dura of the seventh nerve; 7′, the auditory nerve; 8, the glosso-pharyngeal nerve; 8′, the par vagum; 8″, the spinal accessory nerve; 9, the hypoglossal nerve; 10, the suboccipital nerve; 11, 12, spinal nerves.

When we examine the outer surface of the brain, we observe it folded or convoluted (which shows a longitudinal section of the brain and upper part of the spinal marrow, with the nerves attached to them); and when it is cut into, we find it composed, 1st, of a grey pulpy substance, mostly placed externally, and, 2ndly, of a similar white substance, placed internally. The same materials exist in the spinal marrow, but the white matter is external, while the grey is internal.

The nerves generally, whatever be their apparent origin, pass through the system in ramifications more or less complicated, and, like electric wires, only discharge their functions, whether of motion or sensibility, at their terminations. The nervous cords are thus subject to endless division and subdivision, until they become in many cases so infinitely minute as to escape all observation, even by the aid of the microscope. Since each fibre has its own peculiar destination and special function, and since this destination and function is in relation with the brain, it must be apparent that the various ramifications, in successively uniting together, as they approach their origin, can never be deprived of their proper functions, nor lose their individuality. It must not, consequently, be supposed that there is any analogy between the cases of blood-vessels running into each other, where the confluent streams are mixed, to form a single current after their union, and those of nerves coalescing, so that two or more fibres form a single cord. It must be considered, on the contrary, that in such coalition there is no actual mixture of nervous substance, and that the fibres are merely ranged side by side in mechanical juxtaposition, without any more intimate union.

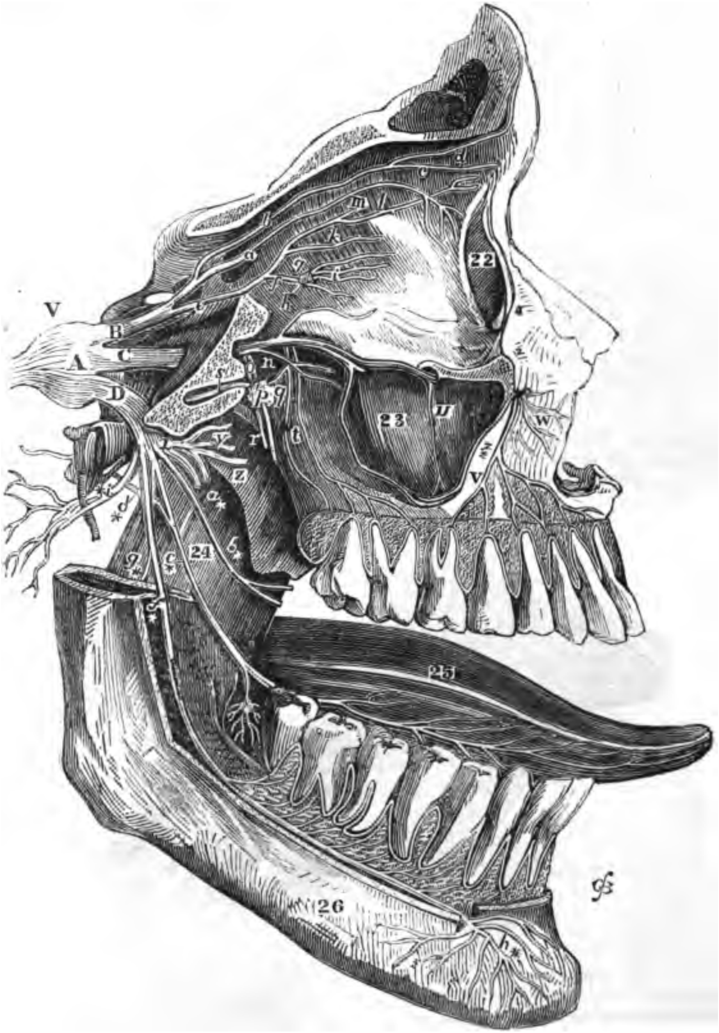
These conclusions, which are derived from analogies of irresistible force, based upon the physiological properties of the nerves, are fully corroborated and con-



THE TELEGRAPH WIRES, OR NERVES, FROM THE BRAIN TO THE EYE.

The nerves of the orbit, with the ophthalmic and otic ganglia, are here shown. 1, the section of the frontal bone, showing the cavity of the frontal sinus; 2, nasal bone of the left side; 19, the internal carotid artery. II. the optic nerve (*to the eye*); III. the third nerve. *a*, the superior branch of the third nerve; *b*, its inferior branch; *c*, the branch to the ophthalmic ganglion; *d*, the ophthalmic or lenticular ganglion; *e*, the upper fasciculus of ciliary nerves; *f*, the lower fasciculus. IV. the fourth nerve; VI. the sixth nerve. *i*, the trunk of the inferior maxillary nerve; *k*, its motor root; *l*, the otic ganglion; *m*, the internal pterygoid nerve, piercing the otic ganglion; *n*, filaments of communication with the auricular nerve.—*Quain and Wilson.*

firmed by direct observation. Each nervous cord is ascertained to be a bundle of fibres enclosed in a common sheath, these component fibres being very numerous, and of unequal thickness.



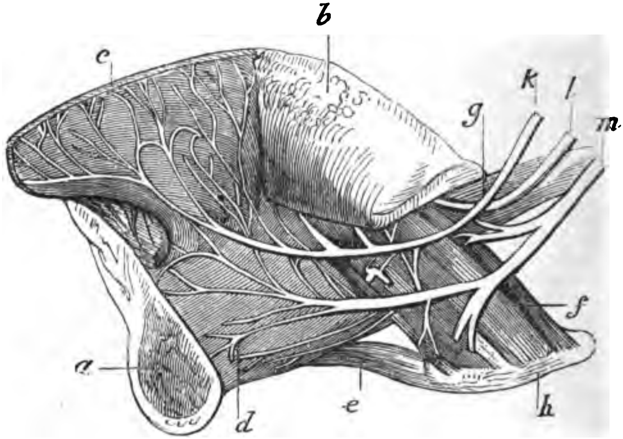
TELEGRAPH WIRES, OR NERVES, FROM THE BRAIN TO THE TONGUE, JAWS, &c. &c.

22, the depression in the lachrymal bone, for the lachrymal sac (*tears*); v. the fifth nerve; A, the Casserian ganglion; B, the ophthalmic nerve (*to the eye*).

a, the lachrymal nerve (*causing tears to flow*); *b*, the frontal nerve; *e*, the nasal nerve (*for smell*); *f*, branch to the ophthalmic ganglion; *g*, the ophthalmic ganglion; *h*, its branch to the inferior division of the third nerve; *i*, its ciliary branches; *k*, ciliary branch of the nasal to the globe of the eye; *m*, the continuation of the nasal nerve through the anterior ethmoidal foramen into the nose; *c*, the superior maxillary nerve; *n*, its orbital branch; *o*, branches of communication from Meckel's ganglion; *p*, Meckel's ganglion; *q*, spheno-palatine branches of Meckel's ganglion; *r*, palatine nerves; *t*, posterior dental branches of the superior maxillary nerve; *u*, a dental nerve given off from the superior maxillary while in its canal, and passing between the mucous membrane and outer wall of the antrum to supply the teeth; *v*, anterior dental branch; *w*, terminal branches of the superior maxillary distributed to the face; *x*, the muscular division of the nerve; *c**, the gustatory nerve; *d**, the chorda tympani nerve; *h**, the mental nerve; *i**, the auricular nerve.—*Quain.*

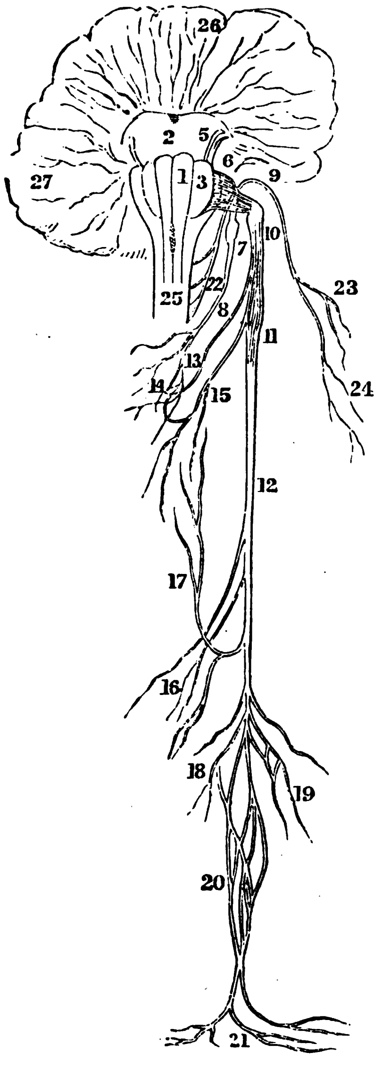
Nerves of the Tongue.—The mucous membrane of the tongue, which, as has been observed, is the seat of gustative sensibility, is supplied with nerves from two principal sources: first, from the trigeminal or trifacial nerves, being those of the fifth pair; and secondly, from the glosso-pharyngeal, or ninth pair. According to Professor Sappey, filaments are also sent to this membrane by the pneumogastric, or tenth pair.

The trigeminal sends a voluminous branch, called the *lingual nerve*, into the lower jaw. This branch, entering the tongue, ramifies through the organ, its filaments terminating in the mucous membrane of the superior surface. It supplies all that part of the tongue which extends from the point over three-fifths of its length. The posterior two-fifths are supplied with nervous filaments by the principal branch of the glosso-pharyngeal.



NERVES AND MUSCLES OF THE TONGUE.—*Béclard.*

a, Section of the bone of the lower jaw; *b*, dorsal or superior surface of the tongue; *c*, vertical section of the tongue; *d*, genio-glossal muscle; *e*, genio-hyo-glossal muscle; *f*, hyo-glossal muscle; *g*, stylo-glossal muscle; *h*, hyoid bone; *k*, lingual nerve; *l*, glosso-pharyngeal nerve; *m*, hypoglossal nerve.

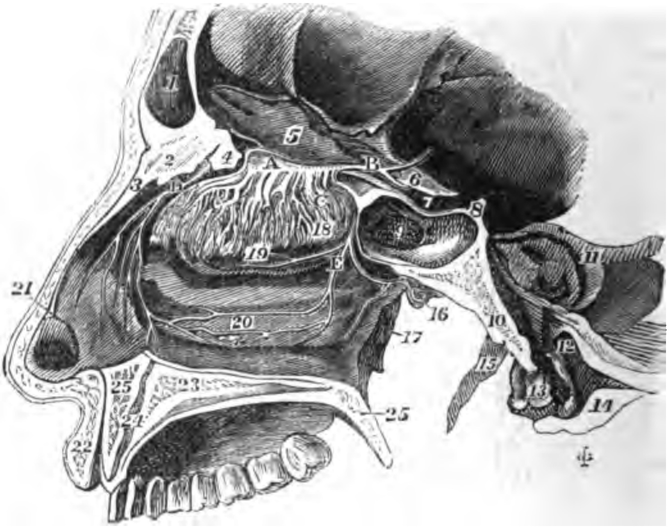


THE BRAIN AND NERVOUS CENTRES, AND PNEUMOGASTRIC NERVE BRANCHING OFF FROM IT.

As a specimen of the mode in which the nerves proceed from the brain, I give this, called the Pneumogastric, from the Greek (the lung and the belly), so named from its distribution. "A nerve which arises on each side by many filaments from the lateral part of the medulla oblongata, immediately below the origin of the glosso-pharyngeal nerve. It passes out of the cranium along with the glosso-pharyngeal nerve, through the foramen lacerum posterius. Immediately after quitting the cranium, it is slightly enlarged for about an inch of its course, forming what is called its ganglionic enlargement. It descends in the neck at the outer and back part of the common carotid artery, in the cellular sheath of which it is included. In the neck it gives off the pharyngeal branch, the superior laryngeal, and twigs which contribute to form the cardiac plexus. It passes into the chest between the subclavian artery and vein, guiding off the inferior laryngeal or recurrent nerve, which twines round the subclavian artery on the right side, and the aorta on the left. In the chest it sends twigs contributing to the formation of the pulmonary and œsophageal plexuses. Lastly, entering the abdomen, it is finally dispersed on the stomach, sending twigs to the omentum and to the neighbouring abdominal plexuses.

Origin and distribution of the Eighth Pair of nerves.—1, 3, 4, the medulla oblongata; 1, the corpus pyramidale of one side; 3, the corpus olivare; 4, the corpus restiforme; 2, the pons Varolii; 5, the facial nerve; 6, the origin of the glosso-pharyngeal nerve; 7, the ganglion of Andersch; 8, the trunk of the nerve; 9, the spinal accessory nerve; 10, the ganglion of the pneumogastric nerve; 11, its plexiform ganglion; 12, its trunk; 13, its pharyngeal branch forming the pharyngeal plexus (14), assisted by a branch from the glosso-pharyngeal (8), and one from the superior laryngeal nerve (15); 16, cardiac branches; 17, recurrent laryngeal branch; 18, anterior pulmonary branches; 19, posterior pulmonary branches; 20, œsophageal plexus; 21, gastric branches; 22, origin of the spinal accessory nerve; 23, its branches distributed to the sterno-mastoid muscle; 24, its branches to the trapezius muscle: 27, back of the head, the

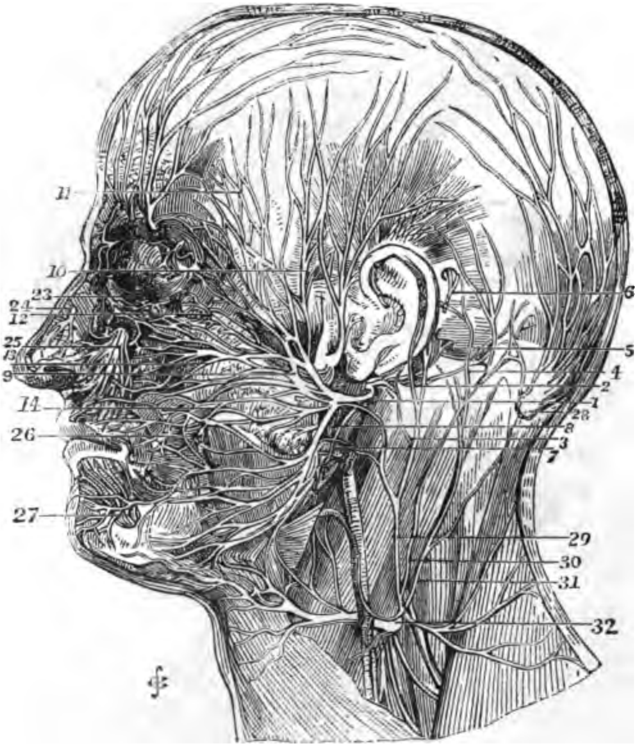
cerebellum, the opposite side to the fore part of the brain; 25, a continuation of the spinal marrow cut off.—*From Carpenter.*



The distribution of the olfactory (to the nose) or first pair of cerebral nerves, by which the sense of smell is communicated to the centres in the brain.

The distribution of the filaments of the olfactory, spheno-palatine, and fifth nerves, to the mucous lining of the external wall of the right nostril.

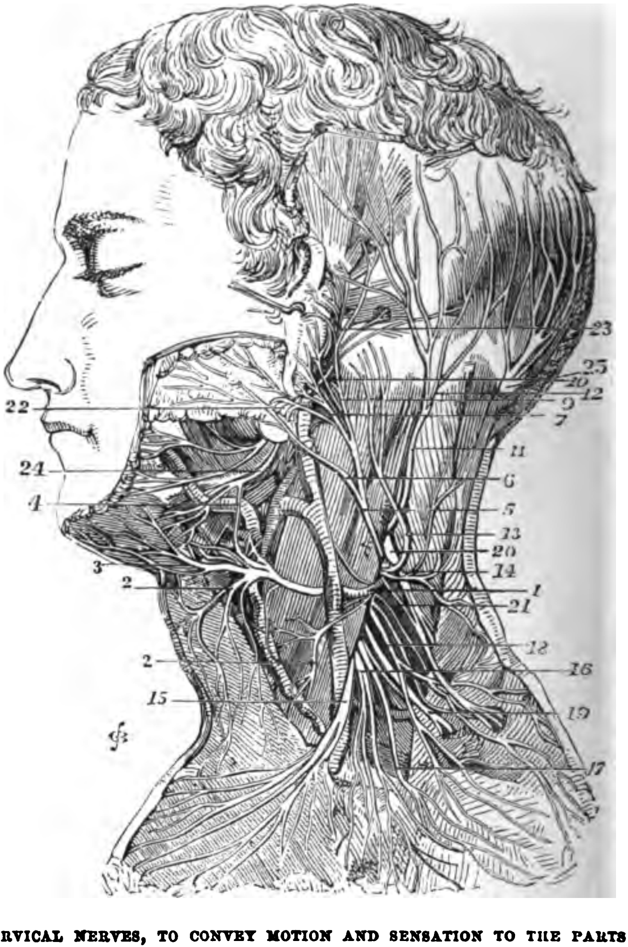
1, the cavity of the frontal sinus; 2, the nasal spine of the frontal bone; 3, the right nasal bone; 4, the root of the crysta galli; 5, the roof of the right orbit; 6, the anterior clinoid process of the sphenoid bone; 7, the concavity of the sella Turcica; 8, the posterior clinoid process; 9, the sphenoidal sinus; 10, the basilar process of the occipital bone; 11, the petrous portion of the temporal bone; 12, the anterior condyloid foramen of the occipital bone; 13, the right condyle of the occipital bone; 14, the inner aspect of the mastoid process; 15, the styloid process of the temporal bone; 16, the opening of the Eustachian tube; 17, the external pterygoid plate of the sphenoid; 18, the projection of the superior spongy bone arching over the superior meatus; 19, projection of the middle spongy bone arching over the middle meatus; 20, projection of the inferior spongy bone arching over the inferior meatus; 21, section of the soft parts of the nose; 22, section of the upper lip; 23, 23, section of the hard palate; 24, the naso-palatine canal; 25, section of the uvula. A, the bulb of the olfactory nerve; B, the three roots by which it arises from the brain; C, C, the distribution of its filaments to the mucous membrane covering the superior and middle turbinate bones; D, a twig from the nasal branch of the ophthalmic division of the fifth nerve; E, the spheno-palatine nerves, or nasal branches of Meckel's ganglion, entering the nasal fossa through the spheno-palatine foramen.—*Quain and Wilson*



THE SUPERFICIAL NERVES OF THE FACE AND HEAD.—*Lardner*.

These nerves govern all the motions of the muscles of the scalp, the ear, the mouth, lips, nose, and eyelids, the integuments of the ear, and the upper part of the neck.

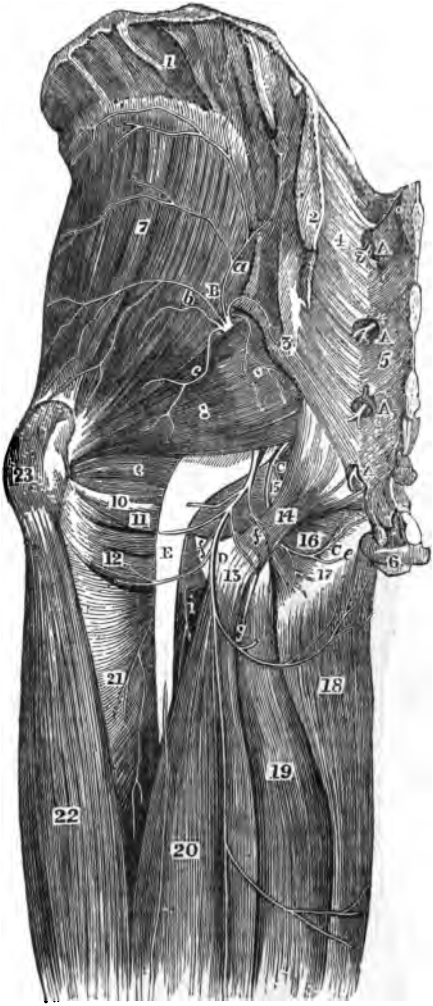
The nerves here described, which are all ramifications of the seventh pair, are exclusively motor, including no sensitive fibres. The parts to which they give motion receive sensibility from the nerves of the fifth pair, called the trifacial or trigeminal nerves. Thus the functions of motion and sensibility are in this case attached to different systems of nerves, while in the case represented in the following figures of the cervical and other nerves, each cord is a compound one, which includes both motor and sensitive fibres; and consequently, while it governs the movements of the parts over which it is distributed, it also receives sensitive impressions from them, which it transmits to the nervous centre.



CERVICAL NERVES, TO CONVEY MOTION AND SENSATION TO THE PARTS REPRESENTED.—*Lardner*.

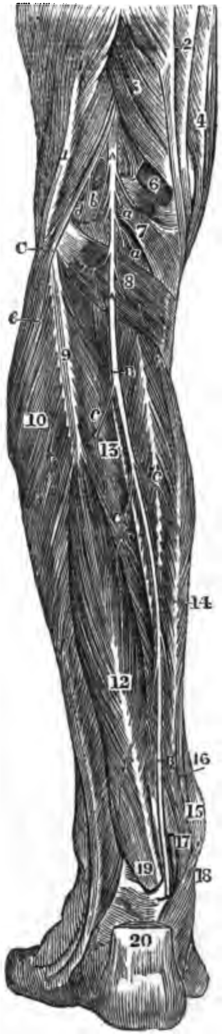
A system of nerves, also connected with the muscles of the neck and the lower part of the head, called the *cervical plexus*, is represented in the above engraving. A transverse branch (1) is directed forwards towards the jaw, and diverges into two ramifications; one (2) descending along the neck, and the other (3) ascending along the jaw. A branch (5), called the auricular, ascends to the ear. Various branches (15, 16, 17, 19) descend to the chest.

ENGRAVING 1.



The great Sciatic Nerve, E, is often the seat of inflammatory action, called sciatica. See page 147 of this work.

ENGRAVING 2.

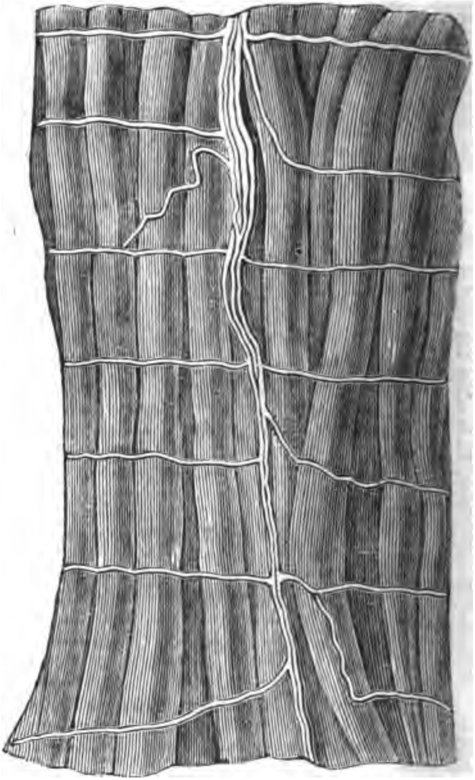


The branches of the sacral plexus of spinal nerves, as they issue from the lower part of the spinal column, to give sensation and motion to the legs.

ENG I. 23, the hip joint; 5, the lower end of the back-bone: **18 19 20, 21.**

muscles of the thigh; E, the great sciatic nerve; D, the small sciatic nerve; A, A, A, the posterior branches of the sacral nerves, seen emerging from the vertebra of the spine; B, the gluteal nerve; C, C, the internal pudic nerve. The great sciatic nerve is the largest nerve in the body; from its size and direction, it may be considered as the continuation or prolongation of the spinal plexus, it being impossible to determine where the one ceases or the other begins. The fasciculi, which enter into its composition or bundle, are derived from all the nerves which go to form the sacral plexus, and every voluntary motion of the leg and foot has to be transmitted through some of the nerves of this bundle. The great sciatic nerves divide generally about the middle of the thigh into an external and internal branch, the latter proceeding down to the heel, as shown in Eng. 2; from this will be seen the nature of sciatica.

ENG. II.—A, A, shows the continuation of sciatic nerve, called here the popliteal nerve. B, the fibular nerve; 10, 12, 13, muscles. The tendon Achilles divided. 19, the tendon of the flexor muscle; 20, the tendon Achilles; 18, the posterior tibial artery.



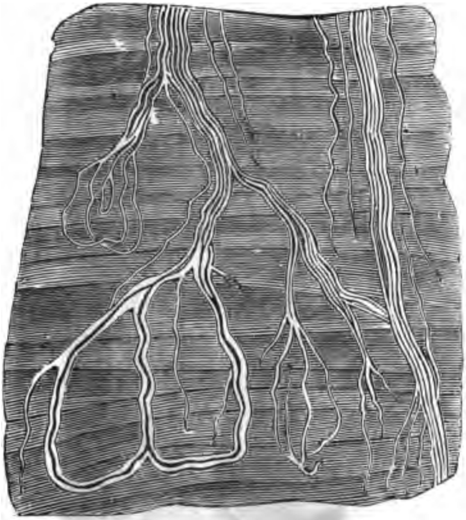
ENGRAVING I.

(*Quain and Wilson.*)

Magnified view of muscular fibres in the state of repose. The main nerve is seen proceeding down the centre, with branches from it on each side.

This shows the state of the muscles and nerves when a limb is at rest; when the limb or any part is moved, the electrical shock from the nervous centres, by the action of the mind, is shown at Engraving III.

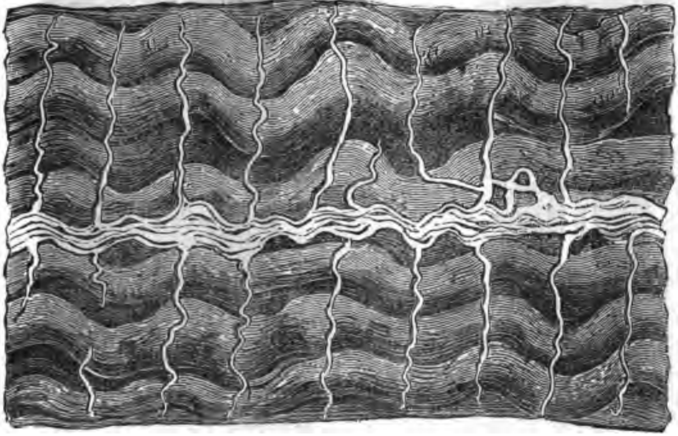
THE NERVES, OR TELEGRAPH WIRES, IN THE MUSCLES OR FLESH.



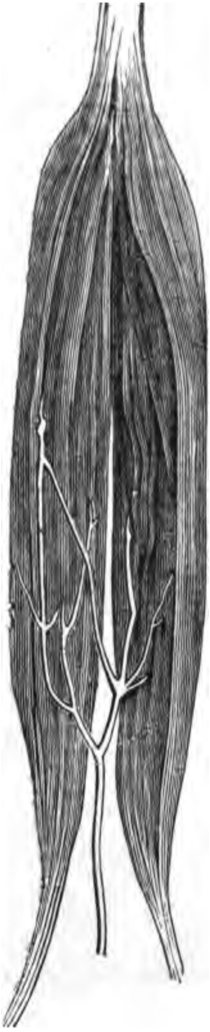
ENGRAVING II.

(*Quain and Wilson.*)

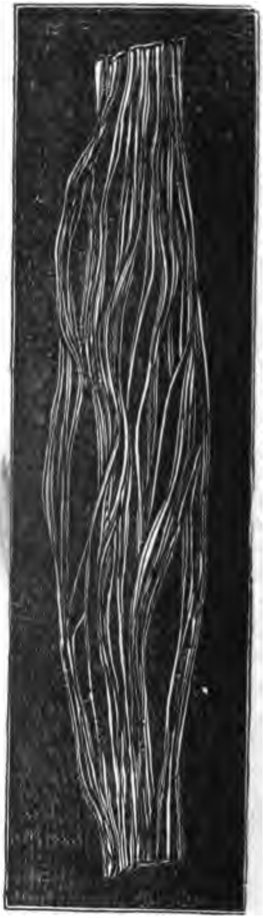
This engraving shows how the ultimate filaments of the nerves are disposed. After branching out someway, as in Engraving I., they become curved and return unto themselves, forming loops; or they incline towards a neighbouring branch, and form inverted arches; and, by this arrangement, carry power of motion and sensation to every part.



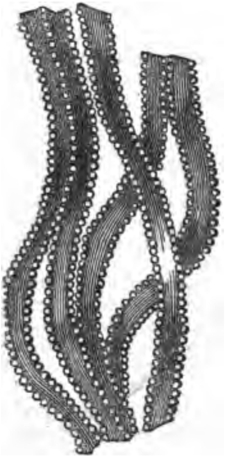
ENG. III.—(*Quain and Wilson.*)—This engraving represents the fibres in a state of contraction, when they are thrown into waving zigzag lines. This state is caused by the operation of the mind on the nervous centres in the brain, sending its telegraphic messages for action to some part by these nerves. This electric shock is performed for every voluntary motion.



A muscle, the biceps flexor, with the nerve seen ramifying amongst the muscular fibre.

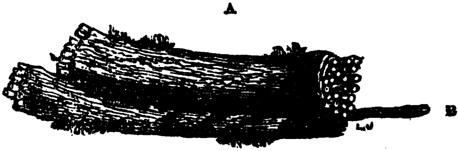


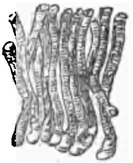
Nervous fibres, deprived of their neurilemma and unravelled, showing the smaller threads, or filaments, of which the fibres consist.—*Dr. Smith*



Ultimate fibres of nerve, very highly magnified; showing the strings of globules of which they consist.—*Dr. Smith.*

A nerve is represented in the following engraving, as drawn by Sir Charles Bell, consisting of many cords, or funiculi, wrapped up in a common cellular sheath. A is the nerve, and B a single funiculus drawn out from the rest. Independently of the common sheath, or neurilemma, each particular component cord has a sheath of its own. All these sheaths are composed of the same fibrous tissue, which appears to be nothing more than a continuation of the tissue which constitutes the neurilemma or sheath of the spinal cord.—*Lardner.*





The interesting discovery has been made within these few years, by German anatomists, that these fibres, and all the fibres composing the nervous matter, are tubes filled with a fluid. The annexed sketch shows the fibres of one of the nerves magnified, with the fluid contained in them escaping from their extremities. It is probable that this discovery may be the means of throwing some light upon the functions of this hitherto little-understood part of the animal frame.

The nervous system is made up of two substances, readily distinguishable by their colour, texture, and consistence. One is greyish, or rather a pale ash colour, and hence named *cineritious* (substantia cinerea); and as in the brain it forms an investment for the white substance, it is usually termed *cortical* (s. corticalis). The other substance is of a pure white colour, and from the relation just indicated is called *medullary* (substantia medullaris). The grey substance invests the cerebral hemispheres, and forms at the same time several masses disposed in their interior; but in the medulla spinalis it is altogether deeply seated.

The white substance, on the contrary, is enclosed by the grey in the brain, but becomes the cortex in the medulla. The cineritious substance is more soft and vascular than the other, and when minutely injected appears as if entirely composed of vessels. Though the white substance in the natural state is not much firmer than jelly, it acquires a great degree of firmness by maceration in spirit, and presents at all times a distinctly fibrous appearance. When these two sorts of nervous matter are attentively examined, they will be found to consist of a peculiar substance called *neurine*, deposited in the areola, of a delicate cellular tissue. This anatomical element, in its natural condition, is soft and semi-fluid, and wherever it predominates much, the part will be pulpy and almost diffluent, whilst other portions of the structure are comparatively firm, by reason of the greater quantity of cellular tissue which they contain. The colour of neurine presents some varieties, being white, grey, or yellowish, and in some places of a dusky hue.

When a thin layer of nervous substance is examined with a microscope, it presents the appearance of small granules, placed in lines more or less regularly; but their form and size are liable to vary. These have been taken by some observers for globules, and have formed the basis of many speculations concerning the nature of nervous action.—*Quain and Wilson.*

The following, on the Eye, is from Lardner:—

The iris is a thin flat annular diaphragm, the section of which is shown at 7, dividing the space between the crystalline lens and the cornea unequally into two parts, called the *anterior chamber, a,* and the *posterior chamber, d.* The external or anterior surface of the iris is coloured blue, black, or hazel, differently in different eyes, and is the part which, seen through the transparent cornea, gives the characteristic colour to the eye. The pupil is a circular opening surrounded by the iris, through which the light received through the cornea is transmitted to the crystalline lens. By this means there is admitted to the crystalline a pencil of rays whose external limits are determined by the edges of the iris. The posterior surface of the iris is covered by a black pigment, contained in a thin transparent membrane, called the *uvea.* In Fig. 421 a view of the ciliary processes (1) which surround and support the crystalline lens is given. That lens, however, being supposed to be removed, the converging folds of which they consist are shown, and the iris (2) is seen by its dark posterior surface through the space filled by the crystalline, with the pupil (3) in its centre. When seen from the front, the pupil appears as a black circular spot, surrounded by the coloured ring of the iris, because every part of the interior of the eye which could be visible through it is coloured black. The aqueous humour fills the compartment of the eye between the cornea and crystalline, and, as its name implies, is a watery fluid holding in solution very minute quantities of albumen and common salt. It is separated from the cornea by an extremely thin transparent membrane, shown at 420, [11], called the *membrane of the aqueous humour,* which however is represented much too thick in the figure.

The crystalline lens (420, *b*) is enclosed in a transparent capsule, and consists of transparent matter, which increases in density and in its refractive power, proceeding from its external surface inwards, and from its edges to its centre. The vitreous humour fills the posterior compartment of the eye (420, *cc*) behind the crystalline, and constitutes by far the largest part of the internal cavity. This is not in immediate contact with the retina, being enclosed in a fine transparent membrane called the *hyaloid* (420, [9]). The eyelids are not in immediate contact with the sclerotic or the cornea. A fine mucous membrane, called the *conjunctiva,* which lines their inner surface, is reflected over the fore part of the sclerotic and the anterior surface of the cornea. A part of this membrane is shown in section at 420, [1]. The eyebrows and other accessories are provided for the protection and preservation of the organ of vision. The eyebrows across the edge of the projecting part of the forehead catch the sweat descending from above, and prevent it from falling on the eyes, and aid in shading the eyes from too intense light from above. The eyelids are movable screens, made so as to cover the eye or leave it exposed, as occasion may require. Glands are provided, by which all the parts which move in contact one with another are kept constantly lubricated.

The motor apparatus, by means of which the optic axis can be directed at will within definite limits to surrounding objects, consists of muscles inserted at various points of the sclerotica, and having their origin in the bones of the socket. These muscles are acted upon by a corresponding system of nerves.

The motions thus imparted to the eyeball are facilitated by a lubricating fluid secreted by a gland, called the lachrymal gland, placed over the eyeball. This fluid is continually spread upon the surface of the sclerotic by the motion of the eyelids in winking.

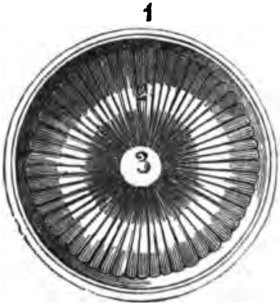


Fig. 421.

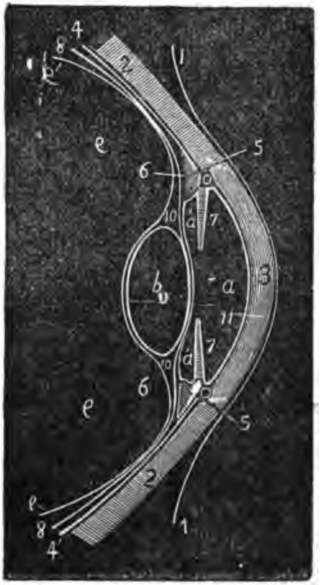


Fig. 420.

In fig. 422 the motor muscles and the lachrymal gland of the right eye are shown by the removal of the lateral bony parts of the external side of the socket.

Lock-jaw or tetanus will probably be cured by persevering in the following bath numbers: 115¾, 81, 169 with 141, 153, 98 with mustard foot bath, 137, 114, 169.

1. Muscle which raises the eyelid. The tendinous expansion of this muscle has been cut away to display the palpebral portion of the lachrymal gland covered by it. 2. Muscle which directs the optic axis upwards. 3. Muscle which directs the axis outwards. 4. Muscle which directs the axis downwards. 5. Muscle of unascertained use. 6. Orbital part of lachrymal gland. 7. Palpebral part traversed by four ducts of orbital part, and sending into these small ducts or canalicules. 8, 8. Accessory ducts proceeding exclusively from the superior border of the palpebral part. 9. Another accessory duct with three lobules.

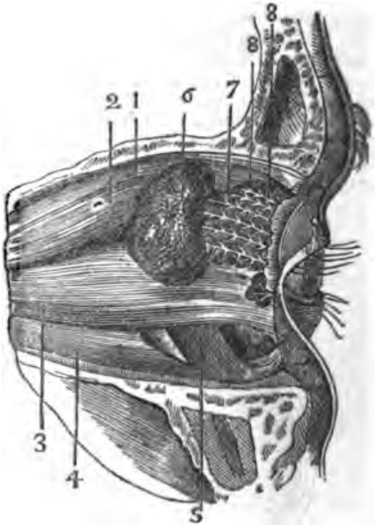
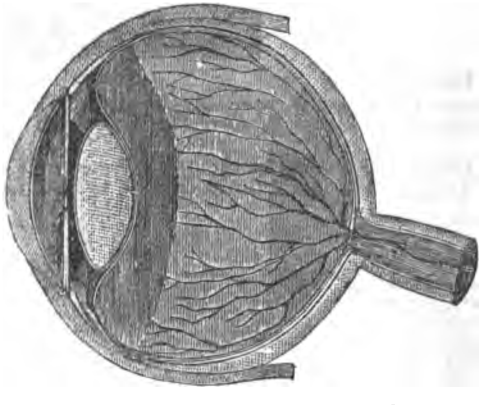
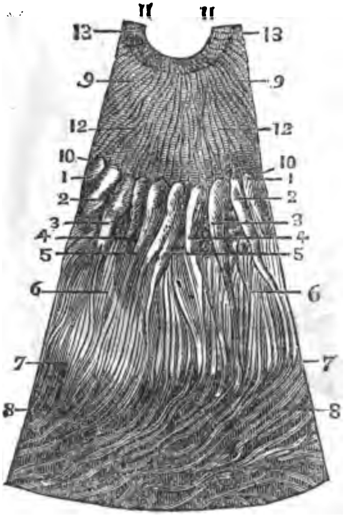


Fig. 422.

MOTOR MUSCLES AND LACHRYMAL GLAND OF RIGHT EYE.—*Sappey*



VERTICAL SECTION OF THE LEFT EYE.—*Sappey*



1 to 5. Ciliary processes. 4. Bifurcated process. 6. Veins ramifying from summits. 7. Festooned border of choroid. 8. Veins of choroid. 10, 11. Borders of iris. 12. Radiating fibres of iris. 13. Circular fibres.

SEGMENT OF IRIS MAGNIFIED.—*Sappey.*

The following is a short extract, and two cuts, from Lardner:—

The Ear consists of three distinct compartments, differing extremely from each other in their form. They are named by anatomists according to their order —proceeding from without inwards—the *external*, *middle*, and *internal* ear. *The External Ear.*—The part of this division of the organ visible on the outside of the skull, behind the joint of the lower jaw, is called the *pinna* or *auricle*. Proceeding inwards from the concha, the remainder of the external ear is a tube something more than an inch long, the diameter of which becomes rapidly smaller; its calibre is least about the middle of its length, being slightly augmented between that point and its connexion with the middle ear. Its section is everywhere elliptical, but in the external half the greater diameter of the ellipse is vertical, and in the internal, horizontal. This tube does not proceed straight onwards, but is twisted so that the distance from the concha to the point where it enters the middle ear is less than the total length of the tube. The external part of the tube is cartilaginous like the external ear, but its internal part is bony; the bony surface, however, being lined by a prolongation of the skin of the auricle. *Membrane of Tympanum.*—The internal extremity of this tube is inserted into an opening leading into the middle ear, which is inclined to the axis of the tube at an angle of about 45°. Over this opening, which is slightly oval, an elastic membrane, called the *membrane of the tympanum*, is tightly stretched, like parchment on the head of a drum. In Fig. 435 the several parts of the ear are shown divested of the surrounding bony matter; and to render their arrangement more distinct, they are exhibited upon an enlarged scale. The concha, with the tube leading inwards from it, marked *a*, terminates at the inner end, as already stated, in the tense membrane of the tympanum placed obliquely to the axis of the tube. The resemblance of this tube and the concha to the speaking or hearing trumpet is evident, and the physical purposes which it fulfils are obviously the same, being those of collecting and

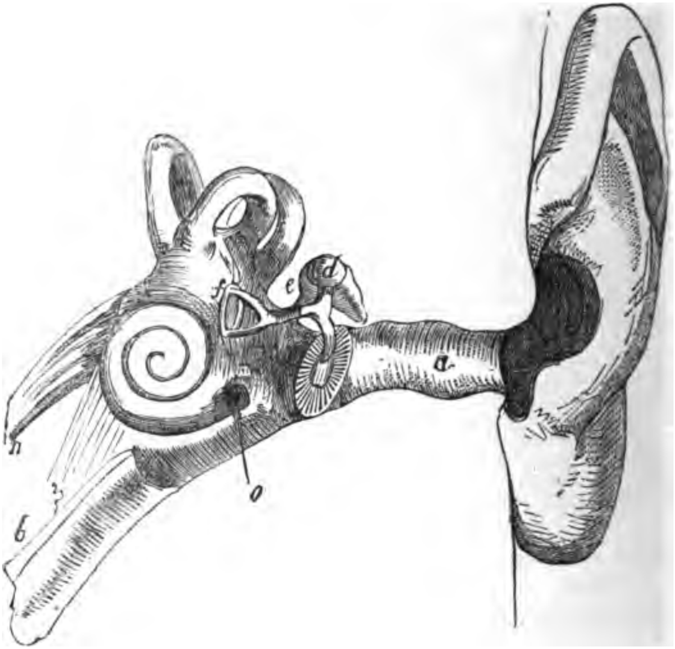


Fig. 435.

conducting the sonorous undulations to the membrane of the tympanum, which will vibrate sympathetically with them.

The Middle Ear is a cavity surrounded by walls of bone, which, however, are removed in Fig. 435, to render visible its internal structure. An opening corresponding to the membrane of the tympanum is made in the external wall, and the external part of the inner ear shown in the figure is part of its inner wall. The inner and outer walls of this cavity are very close together; but the cavity measures, vertically as well as horizontally, about half-an-inch, so that it may be regarded as resembling the sounding-board of a musical instrument, composed of two flat surfaces, placed close and nearly parallel to each other, the superficial extent of which is considerable compared with their distance asunder. This cavity is kept constantly filled with air, which enters it through a tube, *b*, called the *Eustachian tube*, opening into the pharynx, and forming part of the respiratory passages behind the mouth. Without such a means of keeping the cavity supplied with air, having a pressure always equal to that of the atmosphere, one or other of two injuries must have ensued; either the air in the cavity, having a temperature considerably above that of the external air, would acquire a proportionally increased pressure, which would give undue tension to the membrane of the tympanum, and perhaps rupture it, or the air confined in the cavity would be gradually absorbed by its walls, and would consequently be rarefied, in which case the pressure of the external atmosphere, being greater than that of the air in the cavity, would force the membrane of the tympanum inward, and ultimately break it. By means of the Eustachian tube, however, a permanent equilibrium is maintained between the air in the cavity and the external air, just as is the case in a drum, or in the sounding board of a musical instrument, where apertures are always provided to form a free communication with the external air.

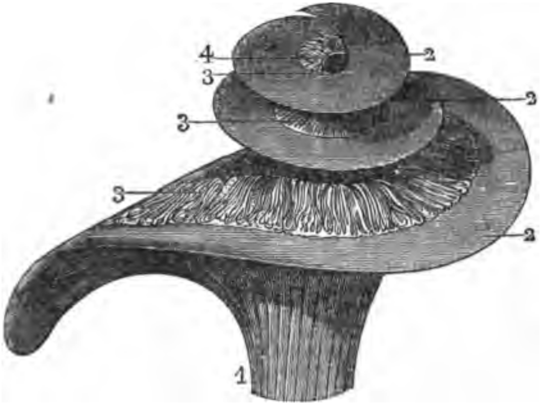
In the inner wall of this cavity there are two principal foramina, a greater and a lesser; the former being called, from its oval shape, the *fenestra ovalis*, and the latter the *fenestra rotunda;* the former is shown at *f*, in Fig. 435, and the latter at *o*. Over both of these, elastic membranes are tightly stretched, as the membrane of the tympanum is over the inner end of the external meatus.

Between the membrane of the tympanum and the membrane of the fenestra ovalis there is a chain, consisting of three, and in the young of four, small bones articulated together, and moved by muscles having their origin in the bones which form the walls of the cavity.

The Internal Ear.—We now come to consider the internal ear, which is, in fact, the true and only organ of the sense of hearing, the external and middle ears being merely accessories by which the sonorous undulations are propagated to the fluids included in the cavities of the internal ear.

The internal ear is a most curious and, as it must be acknowledged, unintelligible organ, also called, from its complicated structure, the *labyrinth.* Its channels and cavities are curved and excavated in the hardest mass of bone found in the whole body, called the *petrous* or bony part of the skull.

Within the three semicircular canals are included flexible membranous tubes of the same form, called the *membranous canals.* These include within them the branches of the auditory nerve, which pass through the semicircular canals, and they are distended by a specific liquid called *endolymph*, in which the nervous fibres are bathed. The bony canals around these membranous canals are filled with another liquid, called *perilymph*, which also fills the cavities of the vestibule and the cochlea. It appears, therefore, that all the cavities of the internal ear are filled with liquid, and it must, accordingly, be by this liquid that the sonorous undulations are propagated to the fibres of the auditory nerves. The liquid being incompressible, the pulsations imparted either by the auricular chain of bones, or by the air included in the cavity of the middle ear, or by both of these, to the membranes which cover the fenestra ovalis and the fenestra rotunda, are received by the liquid perilymph within these membranes, and propagated by it and the endolymph to the various fibres of the auditory nerve.



PERSPECTIVE VIEW OF THE SPIRAL LAMINA, WITH THE FILAMENTS OF THE AUDITORY NERVE UPON IT, DIVESTED OF THE COCHLEA.—*Sappey.*

VISION. The function which enables us to perceive the magnitude, figure, colour, distance, &c. of bodies.—The organs which compose the apparatus of vision enter into action under the influence of a particular excitant, or stimulus, called *light*. The properties of light, and the laws which regulate its movements, form the objects of the science of optics. In presenting the following account of the mechanism and conditions of vision, we must presume the reader to be acquainted with the principles of optics, and with the anatomical structure of the eye and its appendages. An explanation of the former would be foreign to the scope of this dictionary; an account of the latter is given under the head *Oculus*.

Mechanism of Vision.—In order the better to explain the action of light in the eye, let us suppose a luminous cone commencing in a point placed in the prolongation of the *anterio-posterior axis* of the eye. We see that only the light which falls upon the cornea can be useful for vision; that which falls on the white of the eye, the eyelids, and eyelashes, contributes nothing: it is reflected by those parts differently according to their colour. The cornea itself does not receive the light on its whole extent; for it is generally covered in part by the border of the eyelids. The cornea having a fine polish on its surface, as soon as the light reaches it, part of it is reflected, which contributes to form the brilliancy of the eye. The same reflected light forms the images which one sees behind the cornea. In this case the cornea acts as a convex mirror. The form of the cornea indicates the influence it should have upon the light which enters the eye: on account of its thickness, it only causes the rays to converge a little towards the axis of the pencil; in other words, it increases the intensity of the light which penetrates into the anterior chamber. The rays, in traversing the cornea, pass from a more rare to a denser medium; consequently they ought to converge from the perpendicular towards the point of contact. If, on entering into the anterior chamber, they passed out again, they would diverge as much from the perpendicular as they had converged before; and would, therefore, assume their former divergence; but as they enter into the aqueous humour, which is a medium more refractive than air, they incline less from the perpendicular, and, consequently, diverge less than if they had passed back into the air. Of all the light transmitted to the anterior chamber, only that which passes the pupil can be of use to vision: all that which falls upon the iris is reflected, returns through the cornea, and exhibits the colour of the iris. In traversing the posterior chamber the light undergoes no new modification, as it proceeds always in the same medium (the aqueous humour). It is in traversing the crystalline that light undergoes the most important modification. Philosophers compare the action of this body to that of a lens, the use of which would be to assemble all the rays of any cone of light upon a certain point of the retina. But as the crystalline is very far from being like a lens, we merely mention this opinion, which is generally received, to remark that it merits a fresh investigation. Everything positive which can be said on the subject is that the crystalline ought to increase the intensity of the light which is directed towards the bottom of the eye with an energy proportionate to the convexity of its posterior surface. It may be added, that the light which passes near the circumference of the crystalline is probably reflected in a different manner from that which passes through the centre; and that, therefore, the contraction and dilatation of the pupil ought to possess an influence upon the mechanism of vision, which deserves the attention of philosophers. The whole of the light which arrives at the anterior surface of the crystalline does not penetrate into the vitreous body; it is partly reflected. One part of this reflected light traverses the aqueous humour and the cornea, and contributes to form the brilliancy of the eye; another falls upon the posterior surface of the iris, and is absorbed by the dark matter found there. It is probable that something of this sort happens at every one of the strata or layers which forms the crystalline. The vitreous body possesses a less refractive power than the crystalline.

The following selections of Bath Numbers may be useful as a general Guide to Treatment; the separate Printed Lists may be had by application, per post, free.

Nervousness.—The following treatment is intended for cases where there is no positive disease of the nutritive organs, but for the class of dyspeptics with overwrought energies of mind or body. Severe cold water is the rule for such cases at most Hydropathic Establishments; but it is never used without danger to the life of the patient, and never cures. Milder treatment is often resorted to when permanent mischief has been done by the other treatment. The following baths are calculated to avoid relaxing the frame, but at the same time gently stimulate; such cases generally have better appetite than powers of digestion, and often suffer from taking too much food. Warm clothing is indispensable to keep up the vitality of the surface of the body, and thereby relieve internal congestion. Gentle exercise in the open air is necessary. Avoid aperients, however constipated, but occasionally use enema of warm water; but not if action of bowels every few days. 6, 7, 13, 13¼, 13½, 19, 21, 22, 24, 25, 30, 35, 35½, 36½, 39, 43, 45, 51, 55, 63, 64, 70, 70½, 73, 73½, 76, 77, 78½, 87, 91, 92, 93, 94, 95½, 96, 98, 99, 99½, 103, 105, 106, 107, 108, 110½, 112, 114, 115, 115½, 115¾, 116½, 120, 122, 124, 126, 127, 128, 128½, 130, 131, 132, 133, 143, 153, 154, 157, 158, 161, 162, 163¼, 165, 186, 193, 195, 199, 200, 204, 205, 205¼, 206, 207, 210, 210½, 212, 213, 215, 218, 222.

Rheumatism, Acute, is brought on by long-continued indigestion. The red tongue will have shown signs of inflammation of the mucous membrane lining of the digestive organs before the rheumatic pains are felt. In this stage there is inflammatory action, and the treatment must be with a view to stop it, and draw the inflammation out to the surface of the body; this almost always develops itself in crisis (read from 195 to 199), and soon as the rash comes out, relief is soon felt, followed by cure. For this purpose treatment producing greater reaction than in chronic rheumatism is best, such as hot baths, followed by cold, and abstinence from flesh meat, all stimulants, tobacco, coffee, &c. Purgatives or blistering do certain mischief. 9, 17, 22, 22½, 25, 26½, 33, 35½, 40, 41, 42½, 43, 44, 46, 47, 52, 55, 58, 59, 60, 61½, 66, 73¾, 75, 78½, 88, 93, 98, 118, 121, 133, 137, 141, 144, 150, 150½, 153, 153¼, 153½, 160, 161, 161½, 162, 163, 165, 168, 170, 186, 193, 194, 195½, 199, 206, 207, 208, 210, 214, 220, 222, 223.

Chronic Rheumatism.—When the first stage of rheumatism (acute) has been allowed to go without remedies, the vital powers of the body become prostrated in a degree which, without inflammatory action, settles down into permanent stiffness, contraction, and pain on moving. The treatment is with a view to raise this prostrated state by gentle soothing treatment, and not by strong cold and hot baths, which are so beneficial in the first stage of the complaint. 6, 8, 8½, 9½, 11, 13, 17, 20, 24, 25, 25½, 35, 35½, 36½, 37½, 46, 47, 51, 52, 53, 55, 57, 57½, 59, 61½, 69, 75, 78, 92, 99, 108, 110½, 112, 114, 118, 123. 124, 127, 128, 130, 137, 140, 141, 142, 143, 149, 150, 153¼, 156, 159, 160, 161, 161½, 162, 163¼, 166, 168, 169, 170, 172, 186, 193, 195, 195½, 198½, 199, 200, 206, 207, 208, 210, 214, 222.

Bronchial Affections and diseases of the lungs are very generally owing to the changeableness of the English climate, accelerated by carelessness in dress and ventilation, and very much by the attempts at remedy in giving nourishing food, stimulants, and blistering, and tonic medicine. We have, in these cases, the greatest prostration of strength; the bronchial tubes being in a diseased state, prevent a due supply of oxygen to the blood, and hence the rapid loss of strength. There is always fever attending the disease, and any strong treatment or over-excitement by cold baths, or want of proper clothing, will inevitably bring on hectic fever, shown by the flushing in the face and rapid pulse. The great object is very gently to stimulate the nutritive organs, and avoid any strong reaction; the food should be plain, and avoid all heating matter; and to remember that it is not the quantity of food that will strengthen in these cases, but a small quantity proportioned to the greatly weakened powers of digestion; all wine, coffee, and other stimulants bad. 7, 9, 13¼, 13½, 13¾, 14, 19½, 22, 22½, 23, 26½, 45, 45½, 50, 52, 61½, 62, 65, 68, 71, 72, 72½, 74, 79, 81, 82, 93, 99½, 108, 110½, 114, 115½, 128, 130, 131, 132, 133, 137, 141, 143, 150, 153, 153¼, 157, 177, 178, 179, 180, 184¼, 186, 193½, 195, 196, 197, 198, 198½, 199, 200½, 206, 207, 208, 210, 212, 213, 218, 219, 222, 226.

Heart Disease.—The following are the most generally suitable baths. Heart irritation comes on from stomach complaints, female stoppage, and from general nervousness, but these baths are safe for all. Heart disease is rare. Many are unnecessarily alarmed at palpitation, which is a common result of nervous debility, without any disease of the heart. The object to be aimed at, in cure or relief, is by soothing the nervous system, and especially causing stronger circulation in the lower parts of the body, and also in the arms, and promoting healthy action of the stomach and bowels by gentle natural means only. 6, 9, 13, 14, 19½, 22, 22½, 31, 50, 52, 70, 73¾, 104, 115½, 115¾, 137, 141, 143, 150, 153¼, 153½, 157, 159, 160, 161½, 176, 179, 208, 210, 212, 213, 221.

DROPSY.—General baths. The object to be aimed at is to produce perspiration without injuring the digestive powers, keeping the skin warm and active. 19½, 24, 25, 25½, 33, 35½, 47, 48, 57¾, 59, 61½, 69, 98, 122, 130, 140, 141, 141½, 143, 144, 153½, 159, 160½, 161½, 162, 163, 165, 168, 168½, 169, 206, 214, 222, 223, 225.

LIVER DISEASES.—The liver being the principal purifier of the body, as well as having an important office for enriching the blood, any derangement becomes of serious consequence. Pain or uncomfortable feeling under the right ribs, or in the back, betwixt the shoulders, yellowness of the skin—especially in the white of the eye—and strong fur back part of the tongue, are all symptoms of deranged liver. If these first symptoms are not attended to and remedied, the liver becomes hardened, and no cure is possible. The treatment must be with a view to restore the vital power of the organic nerves of the liver, and all simply cold treatment will only further congest the already congested organ. Rest from all excitement or great fatigue, mental or bodily, is necessary for recovery. Calomel and all purgatives will only reduce the vital power, and all stimulants further congest it. Care must be taken not to take many hot baths for the body, but hot treatment must be applied locally, and much to the lower extremities; warm clothing is indispensable. These baths, without reducing the strength, will stimulate circulation and action of the deranged organ. 6, 7, 9, 13, 14, 19½, 24, 25, 33, 35½, 46, 47, 48, 49, 52, 55, 57, 59, 60, 61, 61½, 67, 69, 73¾, 75, 93, 95½, 98, 110½, 115¾, 122, 127, 130, 133, 137, 141, 143, 144, 153¼, 156, 160, 163¼, 168, 169, 170 172, 175, 199, 206, 210, 211, 215, 223.

STOMACH COMPLAINTS. — NERVOUS DYSPEPSIA.—7, 13, 13½, 19, 22, 24, 25, 31, 35, 44, 44½, 50, 52, 57¾, 62, 64, 69, 70, 70½, 73, 73¾, 76, 77, 78½, 90, 92, 93, 99, 112, 114, 115, 115½, 115¾, 121, 128½, 130, 130½, 133, 137, 141, 143, 153¼, 153½, 154, 157, 158, 160, 163, 163¼, 169, 170, 172, 174, 195, 204, 206½, 210, 212, 222, 229, 230.

DELIRIUM TREMENS.—19, 19, 18, 7, 8½, 9, 50, 52, 55, 59, 61½, 62, 64, 69, 75, 77, 79, 90, 92, 98, 99½, 115, 115½, 115¾, 128½, 130, 135, 137, 141, 153, 153½, 163½, 173, 186, 130, 206½, 210, 212, 215, 218, 219, 221.

ORDINARY TONIC TREATMENT.—1, 4, 8, 9½, 16, 17, 18, 21, 30, 32, 36¼, 36½, 54, 56, 83, 95, 99, 100, 101, 105, 106½, 109, 111, 112, 116, 120, 124, 125, 126, 128½, 130, 154, 155, 163¼, 199, 200, 205¼, 206, 210, 229, 230.

VERY DELICATE TREATMENT.—2½, 7, 13½, 13¾, 14, 17, 19½, 22, 23, 24, 25, 26½, 30, 31, 35, 44½, 48, 50, 52, 57¾, 64, 65, 66, 70, 70½, 72, 72½, 73, 73¾, 74, 75¼, 75½, 78½, 92, 93, 94, 96, 99½, 108, 110½, 112, 113, 114, 115, 115½, 115¾, 116½, 119½, 120, 121, 123, 126, 127, 128, 130, 131½, 132, 133 137, 141, 142, 143, 150, 155, 157, 158, 159, 160, 161, 161½, 162, 163¼, 168, 168½, 169, 171, 172, 175, 177, 178, 179, 180, 181, 182, 186, 187, 188, 189, 193½, 195, 198, 198½, 201, 207, 207½, 210, 212, 215, 221, 222, 223, 224, 225.

CONSUMPTION — INCIPIENT OR JUST BEGUN.—10, 13½, 13¾, 22, 24, 25, 26½, 68, 72, 72½, 77, 106, 141, 143, 153, 153½, 156, 177, 180, 186, 195, 196, 198, 207, 210, 212.

WOMB DISEASES, and weakness of the parts in connection with it, are often brought on by pretended curative applications; very serious and sometimes fatal consequences ensue through the unnatural applications of caustic, leeches, alum injections, and the use of the speculum, which always causes injurious irritation. Regular attention to sitz baths, and especially to No. 216, would effectually prevent, in most of the cases, any disease occurring; but when there is derangement of this organ, attention to the mild treatment here laid down will be found efficacious, and, in the generality of cases, nothing beyond will be needed. 2½, 7, 9, 13, 22, 35, 44½, 45, 57¾, 61½, 69, 75¼, 92, 93, 94, 95, 95½, 98, 99, 99½, 104, 105, 105½, 106, 108, 110½, 114, 115, 115½, 116½, 119½, 121, 123, 124, 125, 126, 127, 128, 130, 131½, 137, 141, 141½, 142, 143, 144, 150, 152, 153¼, 153½, 157, 160½, 161, 161½, 163, 164, 166, 167, 168½, 169, 186, 188, 195, 212, 216, 217, 222, 223, 225.

JULY, 1864,

1 **Cold Dripping Sheet.**

2 **Hot** sheet and cold.

2½ **Hot Sheet** rub, then cold sheet over it, then drop sheet and dry rub.

3 One hot sheet and two cold.

4 Hot and cold partially wrung out.

5 Two cold sheets.

6 **Tepid** sheet, 70 degrees.

7 Ditto, pad 90 deg. to front.

8 **Cold** dripping sheet, hot pad to front, drop pad and rub, stand on flannel pad.

8½ Sheet 90 deg., and cold sponge over.

9 Ditto, and tepid sponge over.

9½ Sheet 90 deg., can of cold dashed at the back while sheet is on.

10 **Sponge Over** 70 deg., standing on flannel pad.

11 Ditto, cold.

12 Rub over with dry sheet.

12½ Ditto dry flannel sheet.

13 **Hot Soaping.**

13¼ Do. with flannel sheet out of suds.

13½ Ditto, then rub the body dry with sheet, and rub over with tepid or cold vinegar and water and hand. Delicate patients, do part of the body at a time; then cover that part before doing rest of body.

13¾ The vinegar and water without the suds.

14 **Sponge** over with sponge partly squeezed out of 80 deg., body covered over with blanket, standing in hot mustard, feet wiped with tepid towel.

15 Ditto, sponge out of cold.

16 Stand on hot pad, and have several cans of cold water **dashed** on the back part of the body: hot pad to front.

16½ Ditto, 70 deg.

17 **Pouring** on affected limbs, if on the knee, as follows; if on other parts, on the same plan:—Use the water 90 deg. and 70 deg. out of two large cans, pouring them alternately; place the foot in hot mustard and water in a small foot-bath, and that in a shallow-bath, then cover the foot-bath with a piece of mackintosh, so as to prevent the water that is poured from cooling the foot-bath. Also place a hot fomenting pad all over the thigh. After pouring the alternate cans of 90 and 70 deg. for four or five minutes, then rub the affected part with hot mustard and water with the hand, for two minutes, gently; foot, wiped with tepid towel, and dried with hand till warm.

17½ Pouring with 90 deg. and 70 deg.

18 Rub over with **Sheet** partially **Wrung Out** of cold water.

19 Ditto, out of tepid.

19½ Ditto, with blanket over sheet, standing in hot mustard, wrap both sheet and blanket round the body, and well rub over blanket for a minute or two, quickly remove the sheet and rub with dry flannel sheet, rub feet and ankles with tepid towel, and dry rub with hands after.

20 Towel rubbing cold, hot pad to bowels, No. 13 first, doing upper part of body, and then covering that part before doing lower part.

21 Ditto, without 13.

22 Ditto, **Tepid** towel.

22½ Ditto with 1½ yd. of flannel towel.

23 Warm pad to chest while applying small **Mustard Poultices** between the shoulders, feet in hot mustard, and afterwards rubbed with tepid towel.

24 **Dry Rub Over** with hands only, covering body with blanket, feet on flannel.

25 Ditto with dry **Mustard.**

25½ Ditto, with chillies.

26 **Rub** over the upper part of the body, in bed, with wrung-out sponge cold; put on flannel vest, then sponge over lower part.

26½ Ditto, tepid.

27 **Cold Shallow.**

28 Ditto, 70 deg., quick rub over while in.

29 Pail of cold over shoulders and back.

30 80 deg. shallow, well rubbed.

31 Ditto, 86 deg.

32 Hot sheet, cold shallow quick.

33 **Hot Shallow,** with soaping, then cold sponge, or No. 8.

34 Back spout in shallow.

35 Shallow, 90 deg., and soaping; lower it gradually to 80 deg., rubbing the body while it is lowering.

35½ Ditto, 100 to 105 deg., 5 to 10 minutes, soap, and lower to 80 deg., then dry rub.

36 **Douche.**

36¼ Ditto, standing in hot mustard and water.

36½ Ditto, hot pad to front.

37 Hot sheet and douche.

37½ Hot spouting on affected parts, followed by No. 149.

38 **Wet Pack.** Spread a mackintosh sheet, or thick quilt, on a mattress, and over that one or two dry blankets; then take a thick cotton or linen sheet (coarse cotton, which may be bought for about 6s. per pair), dip it in cold water, and wring the water out as much as possible. This is best done by two persons, the sheet being doubled, one taking hold of each end and twisting whilst any water can be got out. The patient undressed lays down upon the back on the wet sheet, nolding up the arms while one side of it is thrown over the body and tucked in; then the patient puts the arms down by the side of the body, and the other part of the wet sheet is thrown over all, and tightly tucked in: the blanket and mackintosh are then brought over on each side in a similar manner; a bed, or plenty of clothes, is next put on the patient, so as to keep the body warm. Put a small pillow on each shoulder, or more clothes, to keep the warmth better in about the throat and shoulders.

39 Ditto, pack sheet wrung out of **Hot.**

40 Ditto, with a hot pad for the back, and only hot can in front.

41 As 38, with **Hot Dripping** sheet first, or vapour.

42 As 38, with **Legs in hot** foment pads.

43 **Trunk** pack, hot can on front, one hour.

44 Ditto, pack sheet wrung out of hot.

44½ Ditto, the sheet wrung out of hot mustard and water, then No. 12, and replace body-bandage wrung out of tepid mustard and water.

45 Towel pack.

45½ Ditto, with flannel towels.

46 **Fomenting Pack,** as 38, with hot pad behind and before, hot can on blanket.

47 Do., with hot fomenting pads to legs.

48 **Liver Pack,** fomenting under right ribs and stomach for 20 minutes gently, then rub the part dry, then mustard plaister over liver till the part is red; thin linen or muslin next the skin, then cover up with blanket, and lay small hot fomenting can over for ten minutes, then dry rub over stomach and bowels with dry mustard, put on dry body bandage three hours, then wet the bandage as usual.

49 **Liver Pack.** Double a towel in four, wrung out of tepid water, lay it over the liver, then a fold of flannel or small blanket over, then small

fomenting can over the blanket three-quarters of an hour; rub the part with towel or sponge squeezed out of tepid water, then put on a piece of spongio slightly sprinkled with hot water, and wet body bandage over it.

50 Stomach Pack. Double a towel in four, squeeze it out of tepid water, lay it over the bowels; then double a small blanket in four, lay it over the towel; then either the small or whole hot can betwixt the folds of the blanket over the bowels; have tepid wet head bandage on and mustard poultices on soles of feet, 1½ inch broad, so as to touch only the soles of the feet; lay in this pack 20 minutes, then sponge over the bowels with a sponge squeezed out of tepid water.

51 Steam Bath six or eight minutes.

52 Ditto, and sponge over with water 70 deg. in box.

53 Ditto, and cold sponge.

54 Ditto, and cold shallow.

55 Ditto, and shallow 70 deg.

56 Ditto, and **Douche.**

57 Hot sheet before steam bath.

57½ Pour some water 85 deg. over the head and shoulders, while in steamer.

57¾ Hold hot pad to front of body, while in steamer, and renew it out of hot water every few minutes.

58 Steam affected parts, and sponge with tepid.

59 Spirit Lamp, feet in hot mustard and water, tepid cloth to head.

60 Ditto, with napkin wrung out of cold over stomach when the body begins to feel the heat, not before.

61 Soap Over with hot soap, then hot dripping sheet or vapour before spirit lamp, afterwards cold dripping sheet or cold shallow.

61½ Turkish Bath, tepid wet head cap frequently renewed, hot soaping, then tepid and cold sponge after.

62 Fomentation to chest, stomach, and bowels, pad wrung out of hot water, dry blanket and hot can over, tepid dripping sheet after; not cover up so much as to cause perspiration over all the body.

63 Ditto, well covered up, and cold dripping sheet, or cold sponging after.

63½ Foment Pad bottom of back and hips, for lumbago, half hour, with 141; then 10, 166.

64 Gently foment back and front 20 minutes, with pads wrung out of 95 deg., then wipe over trunk with towel squeezed out of tepid.

65 Small foment pad and small hot can only on chest.

66 Ditto, and after, rub all over with sheet partially wrung out of tepid water.

67 Bowel Foment for **Diarrhœa.** Feet in hot mustard water four minutes while undressing, then wrap body in blanket, lay down and put hot can over bowels, and cover up, sipping cold water, or iced water, hot bottle to feet or 153½; remain till pain is gone.

68 Foment Chest and throat 15 minutes, wipe dry, and then put on **Mustard Plaister;** wipe off with *dry cloth*, and put on *dry* chest compress three or four hours, then damp compresses.

69 Fomentation only to **Stomach** and **Bowels** half an hour, hot **Half Pad** and small hot can, afterwards put on body bandage wrung out of tepid.

70 Ditto, 30 minutes, gentle foment with half pad **without Hot Can,** and replace warm pad as it loses its heat.

70½ Ditto, with dry pad and hot can.

70¾ Ditto, with large **Mustard Plaister** over kidneys; then replace body bandage without re-wetting.

71 Chest, throat, and betwixt shoulders rubbed with cold water and hand three or four minutes, and replace chest compress dry; throw a blanket over person while performing the operation, and need not entirely undress, sit, or lie down.

71½ Ditto, with glycerine.

72 Ditto, with tepid water.

72½ Ditto, with hot mustard and water till red.

73 Rub stomach and bowels with hand and cold water for four or five minutes, *gently* and lightly, whilst layiug down on the back.

73½ Ditto, whilst standing one or two minutes.

73¾ Rub stomach and bowels with warm mustard and water, gently three or four minutes, standing in hot mustard with sitz bath blanket over shoulders and back, and then No. 12 without washing off mustard; afterwards replace body bandage, wrung out of tepid mustard and water.

74 Dry Hot half pad over chest next the skin, without entirely undressing; then the chest compress over it, and button up the waistcoat to keep in the warmth for 20 minutes, if the warmth keeps up in the pad; if not, renew it. It should not be very hot to cause general perspiration. On removing the warm pad, re-wet the chest compress with tepid water, and dress: the legs during the time in 137.

75 Dry Foment. Hot can over stomach and bowels, over one or two folds of blanket 40 minutes, and wipe part fomented with napkin squeezed out of tepid, and replace compress wrung out of tepid water.

75½ Ditto, 20 minutes.

75¾ Ditto, 10 minutes.

76 For Digestion, recline on sofa quiet and silent 20 minutes after every meal, with small hot can or mackintosh hot water bag to stomach over the dress, tepid wet head bandage, hot bottle to feet, and sip a tumbler of cold or iced water.

77 Ditto, with feather pillow only, or soft cushion on stomach and bowels, legs and feet covered up.

78 Constipation. If no action and uncomfortable, apply the fomenting pad and can 20 minutes, and wear the body bandage, spongio, or calico and oiled silk, night and day, with flannel wrapper over in night.

78½ Ditto, then rub bowels over for a minute or two with hot soap-suds, and after wiping the suds off with a dry towel, rub in a little glycerine or oil with hand, and put on dry spongio or flannel.

79 Throat Pack with napkin wrung out of cold water, two yards of dry flannel wrapper over, and wear all night; on rising, wash throat with cold water.

80 Ditto, with **Flannel Wrapper** wrung out of hot water, and dry flannel over it one hour, renewing the hot flannel as it cools; then pack with napkin wrung out of tepid and dry flannel over, and keep on all night, and in the morning wash the throat with tepid water.

81 Mustard Plaister to throat and top of chest, wipe off with dry paper, then put round the throat a piece of spongio sprinkled with warm water; dry flannel wrapper over it, keep it on all night, in the morning wash the throat in tepid water.

82 Throat Foment. Take a yard of flannel, fold it in four lengthways, wring it out of hot water, wrap round throat, and one yard and a half of dry flannel over, renew every 15 minutes for one or two hours, wipe with tepid wrung-out towel, and put on spongio sprinkled with warm water and dry wrapper over.

83 Sitz Cold, ordinary sort.

84 Ditto, cold running.

85 Ditto, 65 deg., not running.

86 Ditto, 70 deg.

87 Ditto, 80 deg.

88 Ditto, 85 deg.

89 Ditto, 90 deg.

90 Ditto, 80 deg., eight minutes, run cold in one minute.

91 Ditto, run down to 65 deg.

92 Sitz, 80 deg., hot pad on knees and feet in hot water, and well covered up ten minutes, then dash feet in cold and dry rub them.

93 Sitz 90 deg., **Hot Pad** to chest and back eight minutes, feet in hot, run down to 70 before coming out, if convenient, or sponge over 70 deg., and dry rub trunk.

94 Ditto, without pads.

95 Sponging Sitz. Spread mackintosh sheet on the floor, put the ordinary sitz bath upon it about half full of cold water, kneel down and hold head over bath, and with the common West India or honeycomb sponge, sponge the head and face well and quick, then sit in the bath with the feet out, and sponge the body and squeeze spongefuls of water over the shoulders and spine, then stand in sitz and sponge legs and squeeze more spongefuls of water over shoulders and spine, and then dry the body with a linen or bump sheet.

95½ Ditto, but avoid putting the legs into the water; only sponge the legs and dry rub the body with dry sheet, and blanket placed as No. 19½.

96 Ditto, **Tepid,** as 95.

97 As 95 or 96, with 13 and 130.

98 Sitz, 100 deg., ten minutes; dip a pad in the hot water, and lay it over the back of bath, one over chest and bowels, and feet in hot water; keep arms well down in water and have blanket covering with the head out, then have soaping and a cold sponge over standing in the hot water.

99 Hot sitz two minutes, then well soaping, standing in the hot sitz, then cold sponging quick.

99½ Ditto, 80 deg., sponging.

100 Sitz; sit in **Empty,** and let cold water run in four minutes.

101 Ditto, sit in empty, run cold water in till full, then stop the tap, and remain in four minutes.

102 Sitz, filled with water, 100 deg.: sit in 10 minutes, and then run cold in two minutes.

103 Sitz, 65 deg. five minutes, and cold running one minute.

104 Sitz, 85 deg. 10 minutes, at 11 in the forenoon, and at four in the afternoon, and every day lower the temperature 4 deg., and increase the time four minutes, till it comes to 65 deg. and 25 minutes.

Ladies' Sitz need not Undress. Spread a dry sheet or towel over front of bath, and sit upon it.

105 Sitz, Ladies'.

105½ 80 deg. suds.

105¾ 90 deg. 8 minutes run down to 80.

106 Ditto, cold, two minutes every two hours.

106½ Running sitz.

107 Ditto, 70 deg. six minutes, and one minute cold running.

108 Ditto, 80 deg. six minutes, and 60 deg. four minutes.

109 Ditto, sit in empty, turn cold in till full, and remain in a few minutes.

110 Ditto, 85 deg. eight min., and one min. cold running.

110½ Ditto, holding pad to stomach, wrung out of 90, or dry hot.

111 Spinal Rubbing, gentle, sitting in cold sitz, with blanket over front, feet in hot mustard and water, warm pad to stomach.

112 Spinal Rubbing, sitting **Over** cold sitz, on dry flannel pad, feet in hot, and warm pad to stomach.

113 Spinal rubbing, gentle, with tepid water, ditto, ditto.

114 Spinal rubbing, gentle, with hot mustard water, and one minute cold water, and pad as above.

115 Spinal rubbing, gentle, three minutes, whilst sitting in 80 deg. sitz eight minutes, and pad as above.

115½ Sitz, 85 deg. 10 minutes, feet in hot mustard and water, tepid wet head band on, and one minute gentle spinal rubbing; rub feet with wrung-out tepid cloth and then with dry; dry the body with a sheet gently and dress, keeping on the wet head bandage, then No. 77.

115¾ Brain and Spinal Cases. Prepare a mustard plaister on brown paper, long enough to go all down the spine from high up the nape of the neck to the bottom of the spine; and one also to cover the pit of the stomach. Lay a piece of the thin crisis calico over the mustard plaister before applying it; this will modify the strength of the mustard, and prevent the mustard adhering to the skin; it will also enable the patient to bear it on much longer, and so produce more benefit. When the plaisters are put on, lay a hot dry flannel pad over each plaister, and well wrap up in blankets, using also 153½ and 215 at the same time. This is very useful in brain or spinal cases, or any sluggishness of the system.

116 Cold SPOUTING spine.

116½ Ditto, tepid.

117 Cold spouting affected part.

118 Hot spouting ditto, tepid after.

119 Ascending douche, cold.

119½ Tepid ditto.

120 Back Wash, sit over sitz bath with cold water in, dip towel in water, and draw it over the back several minutes, feet in hot mustard and water, 90 deg. pad to stomach.

121 Ditto, 90 deg. and 65 deg., several minutes alternately; sit on hot pad, feet in hot mustard.

122 Back Sponge, as follows: sit over sitz, and have 90 deg. water, sponge spine downwards gently, with hot water running into the sitz slowly, till it increases to 100 or 105 deg., then turn cold water in slowly, and go on sponging till the water is quite cold, occupying eight minutes altogether; sit on warm pad, feet in hot mustard and water; well cover front of body with blanket.

122½ Not higher than 90 deg. nor lower than 70.

123 Pour two or three **cans** of water 80 deg. down the spine, sitting over sitz, and rub dry, feet in hot mustard and water, 90 deg. pad to stomach.

124 Ditto, 70 deg.

125 Ditto, **cold.**

126 Spinal **slapping with** hands and cold water, one hand quickly and very lightly and gently following the other, three minutes, sitting on warm pad over sitz, feet in hot mustard and water and warm pad to bowels.

127 Ditto, with cold water and **mustard.**

128 Dry Rub Spine very gently until warm with dry mustard and hand, soles of feet in hot mustard water.

128½ Sponge back of **head** and forehead with cold water.

129 Head Bath, cold, 15 minutes, water renewed every four minutes, cold sponge on forehead.

130 Wash head with warm soap and water, then sponge with tepid water.

130½ Pour water over the head.

131 Head bath, 70 deg., eight minutes. quiet.

131½ Ditto, and foment eyes at same time with small pads out of 90 deg.

132 Head well rubbed with cold water and hand, well opening the hair.

133 Ditto, and hot mustard hand and foot bath, same time.

134 Put on a thick cotton nightcap, wrung out of cold water, then a thick flannel one over it, well covering the ears, and sleep in them and in wet and dry socks, and on rising sponge the head over with tepid water.

135 Six inches square foment pad, wrung out of hot water, on each side of the head, while lying down; wrap the head up well in dry flannel or piece of blanket, renew the hot pads every 15 minutes for one hour, then No. 134. Repeat all this twice a-day, or once in the day and at bed-time, or bed-time only.

136 Sniffing Bath, for affection of the nose or frontal sinus, stuffing in the head; take a flannel pad three thicknesses, the length and breadth of a hand, squeezed well out of hot water, and lay on forehead, then a cold wet bandage over it, and round the head; have a basin of cold water, put the nose in and sniff up the water until it returns through the mouth and spit it out; the water cannot always be brought through the mouth on the first trial, but will be accomplished by a few attempts; the application four or five minutes at a time, and three or four times per day, has cured bad discharge from nostrils and headache, and expelled decayed bone.

136½ Ditto, with tepid water.

137 Hot Mustard Leg bath to above calves, then wipe over with tepid towel, and dry rub. rubbing upwards.

138 Ditto, to above the knees.

139 Leg Bath, 90 deg., or just comfortably warm, 30 minutes, for inflamed or sore legs.

140 Steam Legs and No. 17½ after.

141 Hot mustard towel pack thighs, legs, and feet as long as can be borne; then rub dry with a dry cloth, rubbing upwards.

141½ Sciatica.—Steam affected part; then 17.

142 Wet Pack Legs only, with usual thick cotton sheet, each leg separately, then blanket and mackintosh sheet one hour and a half, then sponge with 70 deg., then dry rubbing upwards.

143 Foment pack ditto, with hot pads, dry blanket, and mackintosh sheet, and sponge with water 70 deg.

144 Foment **Lower Part** of bowels, legs, and feet, with pads before and behind, one hour, and then rub with tepid wrung-out towel.

145 For Leg Crisis, when hot or irritable; first have leg-bath tepid, just comfortably warm. not hot, for 20 minutes, keeping up the temperature by adding more warm water; then lie in bed, put a piece of mackintosh to prevent wetting it, and on that a piece of flannel, then dip cloths in water 70 deg. and lay them loosely round the limb; then a single piece of flannel, loose over the wet cloths; keep renewing the wet cloths as they become hot, go on repeating them till irritation and heat are gone: this is applied in the last stage of crisis, and when the discharge has nearly ceased. This especially for crisis when hot and irritable; but if crisis becomes dark coloured, stop and foment, and re-pack with usual wet bandage, flannel, and mackintosh, until the part is red.

146 Sponge legs if matter on gently, with hot soap and water during 145.

146½ Sore Legs. When deep wounds, and strongly inflamed, then use No. 220, applying 150½ two or three times a day. As soon as this has removed the offensive matter, and well cleansed the wound, then apply wash-leather well damped with hot water, and either flannel or spongio, or both, over the wash-leather; and use 223 only for leg, till all inflammation and pain is out. Then only the dressing renewed and the No. 17½ applied. This latter treatment will strengthen the leg much; and when able to bear it, omit the can of 90 deg., and use only 70 deg., or cold, till well. When general pain in leg, but no actual sore, then 214 should be applied till crisis is produced, and then use crisis treatment 145. At the same time, the general health should be strictly attended to; little or no flesh meat; entirely abstain from stimulants and tobacco, or no use trying this.

147 Evaporation for any part under painful crisis, apply on the bed as 145, but use cloths squeezed out of hot water.

147½ After the above operation has removed all matter, and the skin only remains tender, apply silk stockings or wash-leather in the following manner:—After putting the stocking or wash-leather on, then slightly sponge it with sponge squeezed out of tepid water, then merino or lamb's-wool stocking over, or strips of flannel. The dressing must not be removed until the skin is sound; but whenever leg is uncomfortable, damp the silk or leather. This plan hastens the formation of good skin by preserving it from the air and from being rubbed.

148 Immerse the part affected in water 90 deg. frequently; and gradually as the inflammation subsides lower the temperature till cold can be used with comfort.

149 Rub Weak part with the hand and cold water three or four minutes, while the part near is kept warm either with hot pads or hot mustard and water.

150 Ditto, rubbing with **Hot Mustard** and water.

150½ Immerse the part affected in hot soap-suds half an hour two or three times per day, then dress as 151.

151 To **Dress Boils,** three or four folds of linen lint or wash-leather, size of the place, wetted with hot water, then piece of spongio wetted, larger than covers the place, bandaged on with strips of linen or calico; this dressing must be re-wetted often; the cooler the place is kept the sooner it will heal. No. 220 also good, if very inflamed.

152 An **Enema** of warm soap and water.

152½ Ditto, cold.

152¾ With warm water and ½ glycerine.

153 Mustard Plaister to soles of feet, one and a half inch broad, and dry socks to sleep in.

153¼ Mustard plaister to affected part till red.

153½ Hot brick to feet with wet mustard cloth over brick.

153¾ Mustard plaister over kidneys across back.

154 Foot Bath, stamping in cold water two minutes, water only covering toes.

155 Hot Foot bath, four minutes, then stamp in cold two minutes.

156 Hands and **Feet** in hot mustard and water several minutes, then dash in cold water and rub dry.

157 Foot and Hand Bath, 90 deg., mustard and water, well rubbing them whilst in, or well moving them, four to six minutes, then rub with tepid towel and dry hands.

158 Have **Hands** and feet rubbed with cold water and hand, for three or four minutes, till quite warm.

159 Soles of Feet in hot mustard and water, whilst legs and thighs are well dry rubbed upwards with dry hands; dash feet in cold water after taking them out of hot.

160 Ditto, ditto, rub with dry mustard.

160½ Ditto, with dry chillies.

161 Ditto, rubbing with mustard and hot water, putting hot pads to thighs.

162 Palms of hands in hot mustard and water, and hot pad to shoulders; rub the arms, as above, after.

163 Body bandage mackintosh and swansdown calico; calico part wrung out of cold water, and renewed every three hours, worn all day.

163¼ Ditto, wet only the part over bowels.

163½ Ditto, in night only.

163¾ Only every other day.

164 Ditto, as 163, worn from **Rising to Noon,** and from four o'clock to bed-time, and when bandage taken off, replace with single dry flannel bandage.

165 As 163, worn night and day.

166 Body bandage, **Mackintosh** and **Flannel** damped.

167 Ditto, from **Rising until Noon,** and from four o'clock until bed-time.

168½ Water dressing bandage.

169 Spongio body bandage and flannel all day, spongio part to cover the bowels, and sprinkled or sponged with tepid water, but not too wet, or it will drip and be uncomfortable.

169½ Ditto, **from Rising to Noon** and from four to bed-time, replacing it with single dry flannel bandage.

170 Ditto. night and day.

170½ As 169, with piece of spongio over bottom of back.

171 Dry Flannel body bandage, all day.

172 Ditto, over, in night bandage.

173 Body bandage, swansdown calico only, and wet as much as will go round the body, and dry flannel over.

173¼ Dry ditto, in night only.

173½ Crisis Bandage, four thicknesses of jaconet calico, rubbed till soft, wrung out of tepid water, put round the body, and a single dry flannel bandage over, washed and renewed every two or three hours, washing the crisis part every time gently, with warm soap and water, but not to rub the parts; if any discharge, a second bandage should be ready, to have one always well washed and ventilated.

173¾ Crisis bandage for legs when the mackintosh is left off, two thicknesses of crisis calico bandage, wrung out of tepid water, and kept damp by sponging carefully without removing oftener than once in 24 hours, when not much discharge; flannel bandage over.

174 Piece of Spongio damp to **Stomach,** and worn night and day, with single dry flannel bandage over.

175 Ditto, on liver.

176 Ditto, on heart.

177 Half Chest Compress, oil silk and flannel with collar, night and day, sprinkled with tepid water, morning, noon, and night.

178 Ditto, **Spongio.**

179 Chest compress, **Full Size,** silk and flannel.

180 Ditto, ditto, **Spongio.**

181 Half chest **Swansdown Calico,** silk and flannel.

182 Full size ditto.

183 Half Chest compress, double **Swansdown Calico,** one thickness wrung out of water.

184 Full size, ditto.

184¼ Dry flannel, half chest compress, with collar.

184½ Without collar.

184¾ Full size dry flannel, with collar.

185 Spongio jacket complete, with short sleeves, tied in front.

185½ Ditto, oil silk and calico fastened at the back.

186 Spinal **Compress,** silk and FLANNEL.

187 Ditto, silk, and SWANSDOWN CALICO.

188 Ditto, SPONGIO.

189 Ditto, single dry SWANSDOWN.

192 Wet Silk Gloves worn constantly wet, and wetted by putting the hands into tepid water without taking them off; this will take off all heat of hands, or heal rough sore hands.

193 Cotton gloves wrung out of tepid, and woollen over, worn day and night.

193½ In night only.

194 Cotton Socks wrung out of cold water, and dry woollen over, to sleep in; feet in 95 deg. four minutes first.

195 Ditto, wetting only the soles of the cotton socks.

195½ Sciatic leg case.

196 Respirator on going out.

197 Sleep in respirator.

198 Short **Jacket** of merino or flannel, with short sleeves and collar, to sleep in, and handkerchief round the throat, for delicate chests or bronchial affection.

198½ Complete hosiery, merino, or lambswool dress to sleep in.

199 Galvanism.

200 Ling's and other **Movement** exercises.

200½ Special ditto.

201 Eye Glasses, use 70 deg. water five minutes.

202 Ditto, cold three minutes.

203 Ditto, 90 deg. three minutes and cold two.

204 Steep forehead, face, and nose in cold water, and sponge head with cold.

205 Ditto; put the head completely under water, and draw the water up the nose, and let it go into the eyes and ears; then sponge head.

205¼ Eye Douche cold.

205½ Ditto, tepid.

206 Sip water all day.

206½ Cold ginger tea.

207 Tea-spoonful of **Cod Liver Oil,** after breakfast and after tea.

207½ One tea-spoonful at bed-time.

208 No Flesh Meat, only gravy, and a little vegetable or rice, and the usual puddings.

209 No Vegetables, only boiled rice and cold meat, or plain sandwich; no puddings.

210 Very little flesh meat, no beef or pork.

210½ See page 117, stomach disease diet.

211 Liver complaints, very moderate of cold lean mutton, cold chicken or cold game, with bread and cold water to breakfast, dinner, and tea.

212 Cup of weak black tea before rising treatment, a cup of beef-tea with a little toast before forenoon treatment.

213 A little arrowroot or sago at half-past eight p.m.

214 Bandaging limbs, first

strips of calico, wrung out of water tepid or cold, then strips of mackintosh or oil silk, then plenty of flannel strips over all.

215 Wet double calico skull-cap frequently renewed out of cold or tepid water, worn all day.

215½ Ditto, with oil silk cap over.

216 Present time treatment —if wearing compresses have them dry, then on third night two minutes 65 to 70 deg., quiet sitz in running sitz, and damp the compresses in warm water. Fourth day, morning, noon, afternoon, and night, two minutes, 65 to 70 deg. sitz as above. Fifth day, a two minutes' cold sitz as above every two hours till well. If fifth day unsuccessful, then undress and dash into an ordinary sitz with cold water in, and out immediately, then lay on bed, wrapt in blanket, and have towel rubbing over lower part of bowels and back for two minutes, repeat twice per day, and keep quiet.

217 Ditto, not under 70 deg.

218 Ice cream.

219 Iced water.

220 Poultice. Make of white bread, and put in a thin, soft calico bag; applied to any part that requires vitality will be found very efficacious; two bags are required to change, and the poultice is best steamed and applied to the part with spongio-piline over, and flannel wrapper, and if no spongio, oil-silk or mackintosh, kept on night and day, renewed when the heat is down.

221 Fever Pack. Spread a mackintosh sheet on bed, then a blanket, and put a thick sheet well squeezed out of hot water on top of blanket, and let the patient lay upon it with 153½ to feet, and legs packed to knees in hot foment pads; then lay a thick towel also squeezed out of hot water, down front of body, bringing the wet sheet well over shoulders and over towel; then well wrap the blanket and mackintosh sheet over all, put skull-cap well wetted out of cold water on head, and a large sponge slightly squeezed out of cold water for the back of head to lie upon; every quarter of an hour have a fresh towel ready for front of body, and partially uncover the patient, and remove the other towel and place the fresh towel in its place; also frequently renew the cap and sponge out of cold water for the head, and if head is very hot, apply a mustard plaister to nape of neck till red, and then a small hot pad on back of head for a few minutes before renewing the sponge, will draw much heat from head. If the fever is high, the above pack may be thus given for several hours, if the patient is not restless in it; but when removed from pack, some warm soapsuds should be ready to well sponge the patient all over with, and dry rub quickly. This pack may be renewed with perfect safety as long as fever is present. Cold water should be freely given to the patient to drink whilst in pack.

222 Soap Blanket. Blanket partially squeezed out of hot soap and water, laid upon a mackintosh sheet on bed: lay down on this blanket and wrap it round whole body and be well rubbed in it, rubbing *over* the blanket; then give 19½, or should patient be unfit to move about, then gently replace the "Soap Blanket" by a dry blanket, and dry rub whilst reclining.

223 Dry Pack. Spread mackintosh sheet on mattress; also spread two blankets over mackintosh; then, after patient is laid down on blankets, place a hot brick as 153½, and a similar brick on each side of patient, but not to *touch* the body; then well wrap the blankets and mackintosh sheet round the patient, and put a bed on top of all, and if the patient is difficult to sweat, then lay more blankets and another mackintosh sheet over bed. After a good sweating has been produced, then give a quick sponging over whole body, with warm soap-suds and tepid water, or give dripping sheet or shallow, according to the strength of the patient.

224 Winter Turban. Take a strip of flannel, about four inches wide, long enough to go twice round the head. Squeeze half of it out of hot water, and let the other half be dry, to bind over the wet; then put on the skull-cap (see No 215). Keep renewing each of these as often as required.

225 Bowel Pack. Have two large "foment pads," well squeezed out of strong hot mustard and water; put one on front of body and one on back; bind them well on with blanket doubled in four, lengthways; place a mackintosh sheet same way over all, stay in till the patient sweats; then have an empty shallow bath, and place in it a flat tin full of hot water just comfortable to stand upon; sponge down the patient well and quickly with hot soap suds and 10, and also pour 80 deg. water over head. The above "Pack" leaves every limb at liberty, but 153½ should be kept at feet and the head packed as 224.

226 Chest Pack. This is very effective in sudden or obstinate attacks of the chest. Take a flannel pad, four thicknesses, full size of chest and to bowels: wring it out of hot water, lay it on chest, with two thicknesses of dry flannel over, and then full-size silk and flannel chest compress, dry; and put a flannel wrapper round the body, over all, and let it remain on all night; and in morning, tepid wash, and put on silk and flannel chest compress, the flannel part sprinkled with tepid water. If no chest compress at hand to put on at bed-time over the other, put so much more dry flannel; or a cloth waistcoat, buttoned over all, is used with good effect.

227 Eye, inflammation of. Use No. 131½, often renewing the pad, to have it as hot as can be borne; go on with this fifteen or twenty minutes, then No. 201 five minutes, with feet in hot mustard and water; then a small piece of crisis calico and spongio-piline or damp wash leather wetted and put over the eye, and a handkerchief over to keep it on: repeat all this several times per day, till the inflammation is subdued. As soon as most of the inflammation is reduced, omit the piece of spongio on the eye, as it should be kept from the light as little as possible, and continue the other treatment till all inflammation is subdued, then 202 every day to strengthen the eye. When inflammation is strong, or very painful, use 220 under spongio instead of crisis calico; and when height of inflammation over, use eye douche tepid.

228 Wounds slow to heal (see page 149 *Practical Hydropathy*).

229 Rain Bath.

229½ Hot to cold.

230 Spray Bath.

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SPECIAL HOME TREATMENTS.

A. On rising, 162 and 161½, keeping a warm pad, or 153¼, on stomach. Forenoon or afternoon, 157 and 119½; or if 119½ not available, then 105½, and a can of 70 deg. poured through as long as comfortable. Bedtime, 70½, using glycerine rubbing to bowels before and after. Once a week, 222 or 13½.—B. On rising, 12¼. Forenoon, 48 or 49. Bedtime, 137 and 130. Once a week, 99½.—C. On rising, 123, using 128 before and after. Forenoon or afternoon, 110½. Bedtime, 78½ when required, and when not, then repeat the rising treatment. Once a week, 13¼ with 31:—D. On rising, 31, dry rubbing as in 19½, and, if chilly, go into 31 with 12½ on. Forenoon or afternoon, 119½ or 109; if latter, use 25 to loins and thighs afterwards. Bedtime, 70 for a quarter of an hour. Once a week use 13¼ with 31.—E. On rising, 9 or 2½. Forenoon or afternoon, 133. Bedtime, 92. Once a week, 59.—F. On rising, 96 or 97. Forenoon or afternoon, 143 and 132. Bedtime, 105½ and 128½. Once a week, 115¾.—G. On rising, 114 or 115. Forenoon or afternoon, 74. Bedtime, 131½ and 73. Once a week, 98.—H. On rising have 14 or 15. Forenoon or afternoon, 71; but occasionally use glycerine, and then rub it for a quarter of an hour, and have bare feet against 153½, and lying as 76, so that only the chest is exposed. Bedtime have 226 and 82. Once a week, 13¼ before 14, and then 75½.—I. On rising have 22 or 22½. Forenoon or afternoon, 62. Bedtime, 94. Once a week, 59.—J. On rising have 7 or 19½. Forenoon or afternoon, 74. Bedtime, 70 or 69.—K. On rising have 8½. Forenoon or afternoon, 64. Bedtime, 73¾. Once a week, 13¼ and 115¾.—L. On rising have 95. Forenoon or afternoon, 119½ or 109. Bedtime, 12½. Once a week, 33 or 55.—M. On rising have 8 and 12. Forenoon or afternoon, 155 or 159. Bedtime attend to 78. Once a week, 59.—N. On rising have 32. Forenoon or afternoon, 119. Bedtime, 111 or 112. Once a week have 98.—O. On rising, 124 or 125. Forenoon or afternoon, 108. Bedtime, 157 (and 130 occasionally). Once a week, 69, after 13¼; and then 14, with a little vinegar and water.—P. On rising have 50. Forenoon or afternoon, 141 or 143. Bedtime, 114. Once a week, 222.—Q. On rising have 10 or 11. Forenoon or afternoon, 106. Bedtime, 133. Once or twice a week, 99½.—R. On rising have 24 or 25. Forenoon or afternoon, 63 or 64. Bedtime, 105½. Once a week, 223.—S. On rising have 115. Forenoon or afternoon, 131½ and 157. Bedtime, 149 or 150. Once a week, 13½.—T. On rising have 126 or 127. Forenoon or afternoon, 110. Bedtime, 70½. Once a week, 33.—U. On rising have 7. Forenoon or afternoon, 49. Bedtime, 120. Once a week, 13¼, and 2½ after.—V. On rising have 26½. Forenoon or afternoon, 156. Bedtime, 92. Once a week, 38 or 47.—W. On rising have 111. Forenoon or afternoon, 161 and 132. Bedtime, 112. Once a week, 13 with 93.—X. On rising have 25 or 25½. Forenoon or afternoon, 115½. Bedtime, 78½, without the foment.—Y. On rising have 95½. Forenoon or afternoon, 137. Bedtime, 73. Once a week, 13¼ with 30.—Z. On rising have 123. On forenoon or afternoon, 107. Bedtime, 128½ and 161½. Once a week, 98.

APPARATUS FOR HOME USE.—One or two sitz baths, mackintosh sheet, sitz blanket, two sponges, one pair foment pads, one pair soap pads, portable steamer and mackintosh petticoat for steam bath or local steaming, hydropult, page 268, also useful for douching or spouting parts, foot bath, leg bath, Etna, page 283.

HYDROPHOBIA.

On issuing this, the seventh edition of "Practical Hydropathy," I think it will not be out of place to make a few remarks upon the disease called Hydrophobia, about which we frequently hear so many horrible, but, at the same time, ridiculous stories, such as the patient going into convulsions at the sight or even the very name of water, barking like a dog, showing fierceness and attempting to bite any person who may be near him, foaming at the mouth,* &c. &c.; but which disease is only a form of the well-known one called tetanus.

In the first place, the name given to the disease, "Hydrophobia," or *fear of water*, is erroneous; for the convulsions brought on by attempting to swallow water or fluids would equally follow the attempt to swallow a piece of beef-steak, or any other solid food. It might, therefore, be called, with equal justness, dread of beef-steak. In proof of this, I will quote a passage from the account of the last case of so-called Hydrophobia at Liverpool, described in the *British Medical Journal* of June 11th, 1864, page 633:—

> "10 P.M. The pulse was 120, more feeble. He had suffered much from the paroxysms, which had been more frequent, but less violent. He had slight muttering delirium, but when roused was quite rational. He sat for some time on a slipper bath, half-filled with water, the *sight* of which in this vessel did not disturb him; so that it would appear as if the dread of and spasms excited at the sight of fluids were associated with the desire and attempt to *swallow* them."

Now compare the above with the description of tetanus, in *Hooper's Medical Dictionary*, page 1283, and it will be seen how singularly the two cases correspond. Here it is:—

> "Attacks of tetanus are seldom attended with fever, but always with violent pain; and the spasms do not continue for a constancy, but the muscles admit of some remission in their contraction, which is frequently renewed, especially if the patient makes the least attempt to speak, drink, or alter his position. The mind generally remains undisturbed to the last."

The same medical authority also says, "Tetanic affections are occasioned either by exposure to cold or by some irritation of the nerves, in consequence of local injury, by puncture, incision, or laceration;" so that a wound caused by the bite of a dog might bring on tetanus, especially if the injured parts were excised, and caustic applied to the raw surface. I do not know anything more likely to bring on tetanus than the application of caustic to a raw wound, and have myself seen the fatal consequences of its use.

About five years ago, Mr. Witham, farmer, of Winster, near Matlock, trapped his thumb with the horse-chain, when ploughing. He took very little notice of the wound at the moment, merely applying some trifling remedy; but after a time the arm began to swell, and he went to a doctor, who cut deeply into the thumb, and then applied caustic frequently and severely. Tetanic symptoms appeared, and I was sent for. By means of fomentations, packing, and other soothing appliances, we subdued these symptoms; but it was too late. The patient died from nervous exhaustion ; and the surgeon with whom I usually consult unhesitatingly pronounced his opinion, that the attack of tetanus, and consequently the man's death, had been entirely owing to the free use of caustic. Had he seen me before the caustic was applied, I have no doubt he could easily have been cured.

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* The ejection of saliva from the mouth of the patient occurs simply from inability to swallow.

I earnestly caution any person bitten by a dog not to allow a doctor to cut out the part bitten or to apply caustic, but to foment it well with hot water, and afterwards proceed according to directions on page 148, for treatment of wounds, &c.

The medical writer I have quoted above (Hooper), speaking of the symptoms of Hydrophobia, says they have been observed "to follow the course of the nerves, rather than that of the absorbents. The freedom of the lymphatic glands from disease, indeed, has often been noticed, and adduced as an argument that the disorder does not depend on the absorption of any virus."

If the disorder does not depend on the absorption of any virus, which I think is a fact quite clear to an unprejudiced mind, then, of course, it cannot be communicated by the bite of a mad dog (though tetanus arising from a lacerated wound may be so caused) ; and in this case how barbarous and absurd must be the use of the lancet and caustic, adopted by medical practitioners who believe in this imaginary disease.

But if any one has unfortunately submitted to this treatment, and should tetanic symptoms ensue, I recommend the remedies described on page 423, which should be persisted in until relief is found.

JOHN SMEDLEY.

Hydropathic Establishment, Matlock Bank,
August, 1864.

MATLOCK BANK

Hydropathic Establishment,

Near Matlock Bridge Station, Derbyshire.

UNSURPASSED AS A WINTER RESIDENCE,—MILD TREATMENT.

£10,000 HAVE recently been expended on the Hydropathic Establishment, Matlock Bank, in addition to the previous large outlay. The proprietor has spared no expense to make it also a perfect winter residence, and it is now unrivalled as a home for the invalid.

EVERY care has been taken to have the rooms large and airy, well ventilated, and well warmed when weather requires. The views from the windows cannot be surpassed in beauty by any place in England, and the rooms are so connected with the extensive glazed saloons and baths, that invalids need not go out of doors in bad weather, and yet have all the advantages of air and exercise. Spacious, lofty bath houses (all the boxes private for each patient). For a winter residence, also, this Establishment is unequalled in the Midland and Northern Counties, as the whole premises are warmed throughout with steam-pipes, and a summer temperature kept up during the winter. The entire front, 160 feet long, glazed the whole length, affording beautiful views, makes it a most cheerful residence at all seasons, and, from the thorough and safe ventilation, very advantageous in the restoration of invalids. Invalids may be removed here in severe weather, and at once have a bed-room warm, dry, and ventilated, such as they cannot have at any private residence.

THE Establishment is about 16 miles from Derby, situation highly advantageous for health, entirely sheltered from north and east winds, soft water, from the sandstone rocks, of the purest kind, and all necessary apparatus for carrying out the treatment. There is a resident matron and steward.

AT this Establishment Hydropathy is practised on the principles of mild and rational treatment, in accordance with the requirements of constitutions weakened by the effects of ill health or disease (which cannot bear violent and sudden shocks without great risk), and the uniform success in curing or relieving a large number of cases, confirms the Proprietor in his convictions that this is the only principle on which Hydropathy can be safely and efficaciously practised. The nature and success in curing many desperate cases who had previously given up hopes of even relief will be seen in Mr. Smedley's book on "Practical Hydropathy."

A thorough knowledge may here be gained of the domestic application of Hydropathy, and general personal management as regards baths, diet, clothing, &c., so as to meet all the contingencies of life. There is not the slightest risk to the most delicate constitution, and the treatment is applicable to any ailment the body is liable to, without risk or shock to the system, and in all cases of female complaints, unrivalled for efficacy, and absence of all painful or disagreeable applications.

Mrs. Smedley has the medical charge of the lady patients, who can, before coming, state their cases by letter to her, if they are in doubt as regards the treatment being suitable to them; all other inquiries respecting the Establishment to be addressed to the steward or matron.

THE beautiful scenery of the locality is well known; Matlock Bath, Chatsworth (Duke of Devonshire's), Haddon (Duke of Rutland's), and the Peak, are all within easy distances. The dining saloon is lofty, 98 feet long, 30 feet wide, the whole front glass. The new drawing-room, 60 feet long, 30 wide, and lofty, the whole front glass, is connected with the dining saloons, parlours, and bed-rooms, and commands the beautiful scenery of the Matlock valley. Delicate patients, who can take but little

out-door exercise, are sheltered by a covered promenade, 200 feet long, open to the south. There are also alcoves and private walks in the grounds, smooth and easy, suitable for bath chairs.

Divine worship in the chapel within the premises; also at the parish church, and at several chapels within a short distance.

No expense has been spared in the culinary department; the kitchen, 50 feet long, 35 feet wide, and 30 feet high, with glass dome roof, is very effective. The two Turkish baths, one for ladies and one for gentlemen, are a modification of those in general use.

TERMS AND RULES.

ADVICE, board, lodging, baths and attendance, with sheets and blankets for baths, 6s. per day. No fees whatever allowed to servants or bath attendants. No doctor's entrance fee charged. Young persons under 14 years of age, 3s. per day. Owing to the delicate state of health of some of the patients, it is felt necessary to adopt the following rules:—Young persons under 14 years of age will not be allowed to go into the drawing-room. They will not be allowed in the saloon except at meal times. Their bed-rooms, the chapel, 60 feet long, 30 feet wide, covered walk, 200 feet, and grounds, will be the only part of the establishment for them to resort to. The chapel will be kept warmed all day when the season requires, so that they may be there as much as they like. Infants and young children not admitted into the Establishment, but treated at lodgings, where careful nurses will give the treatment, board, &c., for 15s. per week. Any patient unable to dress or undress, or requiring more than the usual attendance, must hire assistance. Patients will have choice of rooms from 2 guineas per week to 2½ guineas, including board, lodging, baths, and treatment.

The proprietor does not pledge himself to undertake all cases that come, nor can he judge in every instance by correspondence whether the treatment is suitable for the case.

No books, newspapers, or tracts of an irreligious character allowed, nor any newspapers on the Sabbath. The Establishment letter-bag is not sent for on the Sabbath; the letters remain at the post-office, Matlock Bridge, until Monday morning, if not applied for. The Establishment is strictly closed to visitors (whether friends of patients or not) on the Sabbath, or to patients arriving. Any wanting the best bed-rooms or sitting-rooms, should write and have a reply before coming.

THE use of tobacco or snuff, in any way, is highly injurious, and strictly prohibited. All stimulating beverages disallowed, and all kinds of physic, however simple in their nature, or small in quantity.

Number of patients in 1861, thirteen hundred and seven.

DIET.

Breakfast:—Black tea, cocoa, bread and butter, eggs, cold boiled bacon, and Scotch oatmeal porridge, with sugar and milk.

Dinner:—Varied every day, consisting of roast and boiled mutton, roast beef, fillet of veal, lamb, cold ribs of beef, cold round of beef, rabbits, poultry, fish. *Vegetables:* Potatoes, French beans, peas, cauliflowers, carrots, &c., with pure water to drink, followed by rice, sago, vermicelli, tapioca, flour, and apple puddings, cold ground rice in moulds, stewed apples and rhubarb, apricots, peaches, &c.

Evening Meal:—Same as breakfast, except eggs. Some slight refreshment before dinner and after the evening meal is allowed to delicate patients, or any requiring it.

Ice creams and iced water always to be had, and fruit in season, especially grapes, which are plentiful and cheap from the middle of September to middle of November. English hot-house grapes from June.

PRACTICAL HINTS ON THE WATER CURE.

THE principle upon which Hydropathy acts in curing, is by the simple means of baths, removing morbid matter, stimulating the circulation, and replacing worn-out tissue by new and healthy formation, and causing free action of the millions of pores in the skin, which act as outlets for the sebaceous glands in perspiration, and as absorbents of air to assist the lungs in oxygenising the blood. The accomplishment of this important work being performed by such simple, natural means (and which alone can accomplish the end in view), cannot be done without patiently waiting the operation of Nature's immutable laws. All forcing, either by physic or strong water treatment, only defeats or defers the cure. If any persons submit themselves to the Hydropathic treatment who have serious mucous inflammatory action of the viscera, or have much morbid matter in the system from paralysis, old inflammatory attacks, &c. &c., under the idea that two or three weeks' active treatment will restore them, they will be much mistaken; for probably by that time they will be in an *apparently* far worse condition than previously, and may be, from crisis, quite laid up. If health is only partially deranged, a short time and no crisis will well repay the time and trouble of a short trial, and will give important information. The crisis (boils or eruption) cannot be produced by any Hydropathic treatment or bandages in a healthy person; and just in proportion to the amount of disease, so is the amount of crisis. Some patients, who have not much the matter, may have a slight rash, or a small boil or two; many, no crisis at all.

As I have observed in another place, the body may be in a very disordered state, simply by weakness of the digestive organs; and the *vis vitæ*, or power of life, not being sufficiently strong to cause the proper chemical change in the food after it is dissolved in the stomach, thus acidity follows, and fermentation; this unprepared matter is taken into the system, building it up with morbid materials, which, if the body is not placed in favourable circumstances for throwing off, disease and death must be the result. If patients wish merely to have their general health improved, without caring to be thoroughly well, they should not be anxious for active treatment, nor wear bandages; still, the good air, water, and regular habits at an Establishment, often raise the power of life, and stimulate the body to throw off diseased matter, even after the patients return home; and such an effect is always and inevitably beneficial in the end.

The principle of the Water Cure is raising the power of life by natural means; and just as a wound throws off, in matter and scales, the dead, destroyed tissue, and, little by little, forms new granulations, so must morbid matter be thrown out where it exists to much extent; and this is the only way and the only principle Nature acts upon in curing. It is easy to swallow medicine, and more agreeable, for the present, not to leave home and business; but this inevitably leads to an accumulation of vitiated matter in the system, that not only often prevents the necessity of putting the patients to the inconvenience of leaving home, but takes them out of the world altogether.

"Dr. Macleod, of Benrhydding, after detailing some remarkable cases of shattered health from this very cause, and the subsequent recovery of the patients after the perceptible extraction of mercury, aloes, colocynth, &c., from the body, gives indisputable evidence of the extraction of mercury, which had been taken some years before; while such drugs as aloes were extracted tangibly, and washed out of the compresses that had encircled the body, and making the patient's room offensive with the distinct vapour of the aloes."

I think this explanation necessary, from patients coming to the Establishment with extensive derangement of the whole system—red tongue, parched lips, constipated bowels, dizziness, languor, &c.—and, without informing me they only intended staying two or three weeks at most, and being anxious to take all the baths prescribed, have, at the close of that time, or soon after arriving home, found themselves quite unable to attend to any business from crisis, and, being without the proper applications, have suffered much inconvenience.

Such a course is, in fact, much like patients with fever, or erysipelas, rising from bed in the midst of it, and declaring to the doctor they must go to business, and will take no more physic; that, in fact, their business calls them, and they are compelled to go. The Allopathic system, however, prevents this, because, as one of my surgeon friends remarked, they have to begin with pulling down before they can cure; also adding, "Your Hydropathy begins by building up from the first;" which is the case, as the internal organs immediately respond to the natural healthy stimulus given, and the sufferings from crisis are always accompanied, after the first few days, and often before, by a good appetite, and general feeling of vigour and lightness. *There is no risk whatever with crisis, and little trouble, if the most ordinary care is taken, and all stimulants avoided, nor leeches, lotion, or ointment applied.* There is no crisis in the majority of ordinary cases.

Another point it is necessary to inform patients upon. None go to

Hydropathic establishments without a cause, and that cause is, more frequently than otherwise, the inability to find remedies for their ailments elsewhere. They come in a state of nervous irritation, which gives them a false idea of their real strength, and when this begins to be subdued—the body being brought to its natural state—a feeling of lassitude and weakness is often experienced; but this disposition to rest is one of the most favourable symptoms they can have, and is the precursor of renewed vitality.

The benefits are certain, without any risk whatever to the most delicate, and the cures are effectual, to the entire renewal of the constitution. Such is the power of this natural, invigorating treatment, that men of business and students preparing for examination have, in a few weeks, had their mental powers restored, to transact business or pass examinations for the learned professions with all their former ability. Ministers of the gospel and public speakers with chronic disease of the throat, from over-exertion of the voice, never fail to be cured by a steady application of the system; and in these cases, as well as the former-named, they learn how to remedy occasional over-work, with little trouble, by home treatment.

ROUTES TO MATLOCK BRIDGE STATION.

From London and places south of Derby book to Derby, and there take a fresh ticket to Matlock Bridge Station (not Matlock Bath), changing carriages at Ambergate Station, about ten miles north of Derby. —From Birmingham, Gloucester, and places west of Derby, same as from the south.—From Lincoln and places east of Derby, *viâ* Nottingham to Derby, and as before. — From Edinburgh and the north, *viâ* York and Normanton to Ambergate, changing carriages at Ambergate, and taking ticket for Matlock Bridge Station.—From Manchester, by Sheffield and Lincolnshire Railway, *viâ* Eckington to Ambergate, thence to Matlock Bridge as before; or by rail to Whaley, thence per coach; *viâ* Buxton, to Rowsley Station, near Matlock Bridge Station. A coach runs part of the year from Market Street to Rowsley or Matlock. Tickets can be taken at Matlock Bridge to all first-class stations. Matlock Bridge is a Telegraph Station. Patients and luggage conveyed to and from Matlock Bridge Station free. A carriage meets every train.

The *Midland Penny Guide* gives account of Return Tickets issued for a month.

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This Establishment has been built expressly for the purpose of carrying on Hydropathic treatment, and is commodious and well-situated, commanding views of some of the most beautiful and romantic scenery in the neighbourhood. It is also most effectually sheltered from the north and east winds. The water is soft and pure, and the air bracing. The treatment is applied with a constant regard to the condition of the Patients, and carefully adapted to the circumstances of every case.

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